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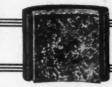
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August, 1931

The Commercial Car Journal

COMMERCIAL CAR JOURNAL PHILADELPHIA, PA., AUGUST, 1931

THE PRESIDENT'S PAGE

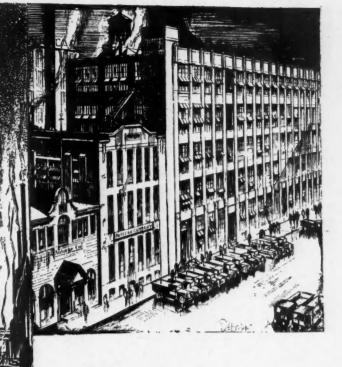
The Effects of the Moratorium, of Truck Users' Progressive Demands, and of So-Called "Idle Equipment" on the Future of the Truck Industry

R. P. Page for

President of The Autocar Company







VERY business man must acknowledge the helpful significance of President Hoover's moratorium, nor can we withhold appreciation of his determination to exert his powerful influence to aid in the restoration of trade throughout the world. While it seems at this writing as though delays abroad had worn down the original stimulus, it is probable that the 12-month moratorium which the President has provided will enable the creditor nations to formulate sound plans by means of which the burden of governmental requirements can be eased or readjusted in such a way that the leaders of trade and industry can be better able to adapt themselves to the new economic levels. After all, there are limits to the revenues which agriculture, mining, manufacturing and trade can provide, even in this Machine Age, and if this depression should ultimately impress the politicians and the statesmen with the fact that the willing beast of burden that they have whipped up hill so long is beginning to falter and weary under the excessive load of governmental expense, great good can result for all people.

The prompt and encouraging manner in which American business opinion buoyantly responded to the President's proposal is, to my mind, an indication that in this country at least there can and probably will be a quick response to any favorable developments. I doubt if the American business machine has grown rusty during the depression. On the contrary, it is probably more efficiently organized today than before. We are almost a self-sustaining nation, and our own consumption, even in these depressed times, is sufficient to produce a volume of business which still maintains here a general level of trade and purchasing power far in excess of those of any other nation. Whenever our own demand will reassert

TURN TO PAGE 50, PLEASE

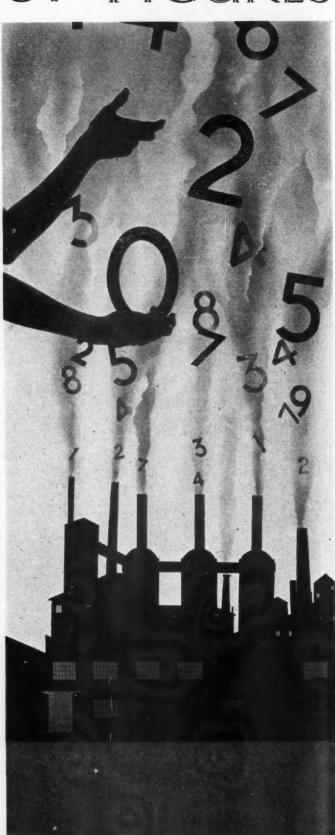
JUGGLING OF FIGURES

In Sales and Production the First Half Was, Next to 1928, the Weakest in Last Six Years. Only One Company Showed Gains

XACTLY a year ago, seated in this same chair and pounding this same typewriter, this same writer looked back with pleasure on the truck industry's record in the first six months of 1930, and cast an appraising eye at the possibilities of the last six months of 1930. Business is just a shade off color now, was the strain he sung to captivate readers, but the fall season is being looked upon by economists as the beginning of the upswing, and if all goes well business ought to be out of the trances by Christmas. The idea there was that along with the apple crop, autumn could be expected to drop a lot of truck orders into the laps of dealers. Well, gentlemen, if you are familiar with that part of the industry's history, you know now that the apples fell, not as applejack, but as applesauce. Instead of a stimulant, there came a bellyache.

It was a pretty piece of optimistic forecasting but unfortunately it was caught in the pelting shower of unabated depression, and fared badly because the writer had (unlike more considerate writers) omitted to furnish it with a pair of qualifying breeches to protect it from the unexpected and to hide its shame. Its luck was no better, and no worse, than that which dogged the predictions of every predictor who had the temerity to be an optimist in a pessimist's market. It's no secret that more words were swallowed in 1930 than in any year since the signing of the Declaration of Independence. Personally, we almost choked on the ones we had to "swally," and whether or not we were taught a lesson you can determine for yourself after wallowing in the old-fashioned statistical orgy we are about to per-

When ledgers throughout the truck industry were balanced for 1930 there was a general feeling that while business was rather sad, it couldn't very well become sadder in view of the fact that the depression had run a pretty long race and was about winded. Some held to this feeling as a conviction; others as a hope. Events since have proved that the depression seemingly was getting its second wind just around Jan. 1, 1931, because of all the first halves in the last six years, the first half of this year took the cake as second worst. It showed up just slightly better than the low first half of 1928, in production as well as domestic sales. Domestic sales in the first half of 1928 were 150,708, and this year they reached



## DOESN'T IMPROVE 1931

177,233 units. Production in the United States and Canada was 256,-187 for the same period of 1928, and 268,508 for 1931.

When your informant finished these simple calculations he was moved by the sorry showing to root out a comparison that would wipe the frown from his face. So he requisitioned the aid of that wellknown solace of desperate statisticians-the five-year average. For half an hour he plastered figures on sheets of paper, and for another half-hour the indicator slid back and forth-now hesitatingly, now madly -over his trusty slide rule. He checked, double-checked and triplechecked, but no end of perspiration could alter the realization that the five-year average had failed him dismally. The results of this awful miscarriage of faith revealed that domestic sales for the first six months of this year were 13.9 per centum under the average for the same period of the five years, 1926-1930 inclusive, and that United States and Canada production was 20.4 per cent under.

The next task was to bloodhound among the mass of statistics for individual showings of companies just to prove the contrapuntal characteristic of a hard-times composition; that while the main theme may be a dirge from the strings, brasses, reeds and percussions, above the dolorous tones may be detected the gleeful rivulet of notes from the piccolos depicting a blissful pæan. (We're back on earth again!) So we picked up the trail of those champion lightweights of the industry-Ford and Chevrolet. Sniffing detected much of interest but nothing of moment. Evidence indicated that both had absorbed their share of punishment and had maintained the same domestic sales positions in relation to each other and the rest of the industry which were established during the first half of last year. (Since an analysis of the figures here might prove confusing. you are referred to Table 3, which you may sniff at your leisure and to TURN TO PAGE 48, PLEASE

#### TABLE I

U. S. Truck Sales for 6 Months of 1931 Compared With 1930 and 5-Year Average

		1931	% 1931 Under 1930	1930	1929	1928	1927	1926	Average	% 1931 Under Average
Jan.	1	24,300°	19.6	30.241	29.857	16.423	27.573	27,934	26,405	7.9
Feb.		23,300°		31.882	32,565	17,513	28,487	23,421		
Mar.		30,900°	26.7	42,182	46,348	24.757	33,475	34,225	36,197	14.6
Apr.		36,741	21.9	47.032	56,278	30,426	37,028	43,125	42.778	14.1
May		33,496	22.5	43,245	52,875	32,434	34.331	37,168	40.010	16.3
June		28,496	15.0	33,512	45,075	29,155	27,246	33,586	33,715	15.5
6 1	Mos.	177,233	22.3	228,094	262,998	150,708	188,140	199,459	205,880	13.9
*Ge	rais	estimate	nd.							

#### TABLE 2

U. S. and Canada Truck Production for 6 Months of 1931 Compared With 1930 and 5-Year Average

		1931	% 1931 Under 1930	1930	1929	1928	1927	1926	Average I	% 1931 Under Average
Jan.		35,475	13.3	40.938	57.765	27.947	44.382	36.577	41.522	14.5
Feb		41,863	20.9	52,925	65,950	34,980	46.014	44,590		
Mar		47 671	30.5	69,031	79.587	44.273	54,168	53,273	60,666	21.4
Apr		53,131	28.6	74,477	91.855	49,537	53,280	57.567	65,343	18.7
May	y	47.812	23.0	62.080	94.940	55.281	52.435	53,883	63,724	25.0
Jun		42,556		51,466	98,164	44,169	46,990	48,486	57,855	
6	Mos.	268,508	23.4	350,917	488,261	256,187	297,269	294,376	337,402	20.4

#### TABLE 3

Ford Holds a 52% Advantage Over Chevrolet in Domestic Sales Battle

		1 9	3 1	1.9	3 0	192	9
Jan.		Ford	Chev. 7.436*	Ford 13.233	Chev. 8.754	Ford 13.019	Chev. 6,169
Feb.		10,678*	7,254*	14,208	10,332	13,313	10,288
Mar. Apr.		14,386*	9,138*	19,551	13,011	17,797 22,790	16,062 18,175
May		15,675	9,932 8,970	19,758 15,669	12,825 9.761	22,364 19,528	15,965
June	********	-	-	-			-
6 M	18	81,993	53,925	104, 176	68,738	108,811	79,893

Ford loss in 1931 was 21.3% compared with 1930, and 24.6% with 1929. Chevrolet loss in 1931 was 21.5% compared with 1930, and 32.5% with 1929. (\*) Georgia figures not included in totals.

#### TABLE 4

1931 Foreign Sales, Total Sales and Increase in Dealer Stocks Compared With 1930 First Half

	% 1931 9 3 1 Under 1930 1 9 3 0
Jan. Feb. Mar. Apr.	10,994 45.6 20,282 10,881 22.2 14,015 14,810 22.7 19,142 15,775 30.4 22,721
May	10,453 51.8 21,733 12,387 19.7 15,412 75,300 33.5 113,305
6 Mos. Domestic Sales Total Sales	75,300 33.5 113,305 177,233 22.3 228,094 252,533 26.0 341,399
	268,508 23.4 350,917 15,975 9,518

## RATING FORMULA IS

HEN the Messrs. Pulcher and Buckendale took the rostrum at the S.A.E. summer convention session devoted to truck ratings and gave to the assembled group their ideas about a standard truck rating formula, history again repeated itself. This repetition was in the form of a discordant note sounded by those who believe there's nothing the matter with present rating methods, and by those who believe nothing can be done about it if there is.

But while history repeated itself, the discordant note turned out to be a bugle call which established a precedent in that it summoned to action a group of influential engineers and an equally influential group of fleet operators. These commenced a bombardment of the dissenters, and a constructive attack on the standard rating formula suggested by Mr. Buckendale. The friendly hostilities terminated in an armistice when Mr. Glynn of the A. T. & T. proposed the formation of a Society of Automotive Engineers committee "to study truck ratings with a view of bringing forth some generally accepted method of rating trucks," which proposal later was endorsed by the Council of the Society.

Eminent Engineers and Prominent Fleet Operators Support Proposal to Devise Truck Rating Standard and Suggest Factors Which Must Be Given Consideration

By GEORGE T. HOOK



Suggestions for Improving

the Buckendale Formula of

G.V.W. = 
$$\frac{T \times R \times E}{W \times (G + F)}$$

in which T is engine torque in lb.-in.; R is total gear reduction; E is over-all mechanical efficiency; W is radius of tire under load; G is gradient, expressed as amount of rise in feet per foot traveled, and F is rolling resistance expressed as pounds of resistance per pound of load.

B. B. BACHMAN, chief engineer, The Autocar Co. b. b. bachman, chief engineer, the Autocar Co.—
I suggest that the gross vehicle weight be determined
by using a gradient factor of 3 per cent in direct
gear, which represents a sound basis for present practice and a reasonable future; that this factor be used for all types of hauling, including tractors and heavyduty vehicles; for the reason that it considers the prob-lem from the basis of ability only; that the engine speed using the gear ratio and wheel size adopted for obtaining the G.V.W. shall be kept within definite

limits, which should be from 50 to 75 r.p.m. for each mile per hour of vehicle speed, the lower figures to apply to the lighter classes of service and the higher to heavy-duty service; that for dump service and tractors the gears, bearings and structural load-carrying portions of the chassis be compared on a basis of continuous operation in next to top gear.

A. J. SCAIFE, consulting field engineer, The White Co.—I suggest we consider a formula having the following as a basis: gross load in relation to the chassis weight: ability as expressed in pounds feet; fixed speed as a constant in miles per hour.

C. A. PEIRCE, vice-president, engineering and production, Diamond T Motor Car Co.—Since the speed of the truck does not enter into the formula, this factor must be assumed. In an effort to simplify the formula, I wonder if it would not be practical to base the speed of the truck on its gross weight.

A. G. HERRESHOFF, chief truck engineer, Dodge Bros. Corp.—I propose that a system of rating be used in which the tire size is the limiting factor of the weight to be carried, and that the vehicle shall have three or four different ability ratings, these ratings to take in a speed.

ADRIAN HUGHES, JR., The United Railways & Electric Co., Balti-more—It seems to me some sort of formula based on gross weight would be a most satisfactory solution to operators and very fair to manufacturers as well.

(In the September issue of Commercial Car Journal, P. M. Heldt, engineering editor of Automotive Industries, one of the founders of the Society of Automotive Engineers and author of automotive text-books, will discuss rating formulas based on chassis weight, vehicle speed and tire capacity, and will make a suggestion.)

After the Messrs. Pulcher and Buckendale had read their papers (published in the July issue of COMMERCIAL CAR JOURNAL), Col. H. W. Alden, chairman of the board of Timken-Detroit Axle Co. and chairman of the truck rating session, set a standard for candid discussion with a caustic critique of the truck business. "There are just two things the matter with it," he said. "One is that nobody has money to buy trucks, and the other is that the truck business is full of hooey." It was apparent that he placed a lot of salesmen in the hooey heap because a little later he



made it three things the matter with the business when he declared that "part of the trouble with the truck business has been the fact that the salesman has been in the saddle for a good many years."

J. F. Winchester, of the Standard Oil Co. of New Jersey, buttressed this opinion before the meeting ended by admitting that to him it seemed "that the man who has controlled the ratings of trucks in the past has been the salesman rather than the engineer," a condition which has resulted "in the oversale of trucks, in serious accidents, many deaths," and a prejudiced public.

F. C. Horner, of General Motors Corp., without elaborating his point, denied the truck salesman was entirely to blame for the general disregard of truck ratings, and claimed that primarily the user is to blame.

These efforts to place blame ended, it may be seen, in a stalemate, which troubled no one because the issue was of no consequence.

Following Col. Alden's example of frankness, T. C. Smith, of the A. T. & T., arose and candidly averred that he was in hearty agreement with anything that could be done to clarify the truck rating matter.

"At the present time," he said, "either the ton ratings or the maximum gross ratings mean practically nothing to a man selecting the truck that is going to do a particular job. From my viewpoint, there are two kinds of trucks; one represents the 'luggers' and includes the dump trucks and similar slow-speed trucks for heavy-duty service; the others are the trucks which are required to carry loads of materials in delivery service. A three-ton truck, or an 18,000-lb. truck in heavy-duty service should have a different rating if used in delivery service. I hope," he concluded, "it may be possible to do something constructive on the truck rating matter. If there were S.A.E. minimum requirement specifications for the slow-speed 'luggers' trucks and higher-speed delivery trucks of various gross rated capacities, that would help a lot. That would establish something that we are now having difficulty in obtain-

#### RATING FORMULA IS S. A. E. TARGET

ing from people like the axle manufacturers who are withdrawing their former ratings on axle load capacities."

Skepticism was just as frankly imparted by Pierre Schon, of General Motors Truck Co., who expressed the opinion that "in so far as devising a standard method which may be used as a guide for the different manufacturers in rating their vehicles is concerned, it is very doubtful if the society or any other organization would be willing or even capable of mastering such a task." Following an exposition of the merits of the gross weight rating system as opposed to the tonnage rating method, he stated: "I can definitely say that we have no problems to solve in so far as the rating of truck chassis is concerned." His earnest wish was that the matter of ratings should be left in the hands of the factory engineer.

The discussion evoked further skepticism from M. C. Horine, Mack Trucks, Inc. He indicated the belief that a practical rating standard could not be developed, saying, among other things, that "so long as research and engineering persist in developing better ways of doing things, just so long will formulas of the type proposed be misleading and ineffective."

#### Load Capacity

"Load capacity," he continued, "depends upon tire capacity, spring capacity, strength of load-sustaining parts, bearing sizes and loadings, performance ability, chassis weight, body equipment and weight, nature of load, character of roads, speed, grades and load distribution. Can any yardstick," he asked, "any rule of thumb, correctly reflect all these factors? Despite the A.L.A.M. horsepower formula, the average purchase of a gasoline engine must depend upon the trustworthiness of the manufacturers' ratings to guide him in the selection of the type which will do his work. Despite knock test end points and gravity tests, we all buy gasoline by brands and manufacturers' ratings. How then shall we rate the tremendously more complicated capacity of a motor truck? In doing so, what shall we rate?"

Mr. Horine got no specific answers to his questions, but his skepticism was overwhelmed by a barrage of beliefs in the need for a standard rating method and confidence in the possibility of a standard formula eventually being developed. On this firing line were such eminent engineers as B. B. Bachman, of Autocar; C. A. Peirce, of Diamond T; A. J. Scaife, of White, and S.A.E. presidential nominee for 1932; W. S. James, Studebaker, and A. G. Herreshoff, Dodge Brothers. And ranged alongside them were representatives of big fleet operations. These, in addition to Mr. Smith, Mr. Glynn and Mr. Winchester, were P. P. Pierce, Vacuum Oil Co.; Adrian Hughes, Jr., United Railways & Electric Co., Baltimore; J. M. Orr, Equitable Auto Co., Pittsburgh, and others.

The engineers, after complimenting Messrs. Pulcher and Buckendale for their contributions, made a target of the Buckendale rating formula and peppered it with constructive criticism. This in itself was convincing proof of their deep interest in the subject and desire to see something done. Suggestions made by Messrs. Bachman, Scaife, Peirce and Herreshoff appear on page 17.

#### Two Viewpoints

Mr. Bachman prefaced his suggestions with analytical study of the proposals embodied in the Pulcher and Buckendale papers.

"The papers," he said, "are representative of two viewpoints on the problem of truck rating. Mr. Pulcher takes into consideration two factors—ability and chassis weight—and by selection of suitable constants translates engine torque and chassis weight into gross weight. Differences of opinion will naturally arise as to the values to be selected for these constants, but these are details which do not affect the scheme if it is otherwise a practicable one. Mr. Buckendale, on the other hand, bases his proposal on the tractive ability of the vehicle alone.

"It seems to me that the most valid objection which can be offered to these proposals is that, in the endeavor to simplify a complex problem, too many factors are assumed to remain either constant or essentially so.

"I will admit (as Mr. Pulcher claimed) that the chassis weight bears a ratio to its carrying capacity unless the design is an obvious freak, but it certainly does not bear the same ratio on a concrete highway and in sand. The same objection can be made to assigning one fixed value for the ratio of torque to gross weight.

"Mr. Buckendale answers this objection by assigning different performance values for differing types of service and brings into the picture consideration of gear ratio, which is obviously necessary, but leaves the question of a desirable value for gear ratio out of the discussion entirely.

By his formula it is possible to obtain the G.V.W. value with a large engine and a low numerical ratio or a small engine and high numerical ratio. In the first case the engine will operate at a low speed; in the second case at high speed, or the vehicle speed will be affected in the reverse direction. It seems to me that two vehicles built on such diverse plans cannot be satisfactorily compared in such a simple manner as they obviously would not perform alike in any other way than the manner in which they perform continuously in high gear.

"The problem before us is to develop a simple and convenient means of comparing chassis. The buyer is interested in this as a basis for comparing values and the suitability of a given chassis to his particular needs. Obviously, this immediately introduces a wide variety of conditions which make the matter quite complex. On the other hand, the manufacturer would be glad to have the simplest method possible which would allow him to show the superior points of his product. This introduces still greater complexity and therefore I feel, as stated before, that any method such as has been suggested leaves too many factors which are assumed to remain

Thereafter he proceeded to make the suggestions spotted on page 17, his purpose being, he said, to present in turn a mark which could be attacked.

#### Torque and Speed

Mr. Scaife argued that a rating formula should express ability in terms of pounds-feet torque rather than cubic-inch displacement, and should embody fixed speed as a constant in miles per hour. Displacement is undesirable, he pointed out, because it is necessary to take compression ratio into the calculation due to the low, medium and high-compression engines giving different results with the same cubic-inch displacement. He illustrated his contention by means of a chart showing ability factors. The need for a speed factor he argued thus:

"An engine with 200 pounds-feet torque and a vehicle gross load of 8000 lb. will negotiate a 6.6 per cent grade at 20 m.p.h. with an axle ratio of 6 to 1, using 30 x 5 tires on a 30-lb. road. If the speed were not taken into account, it would be possible to take 16,000 lb., or twice the gross, up a 6.6 per cent grade with a 200 pounds-feet engine by changing the gear ratio from 6 to 1 to 12 to 1. This would give the same performance from an Turn to page 46, please

## SALESMEN TO SELL MUST HAVE TRUCKS TO SHOW

HERE are still a great many sales executives who seem to think that their salesmen ought to get orders merely by dangling under prospect's noses a piece of literature beautifully prepared in attractive color, seductive English and glowing specifications. If you tell them that prospects before signing away their dough want to rub elbows with the thing they are buying-that they want to see it, feel it, get in it, try it, etc .they don't understand your language -on purpose. All they can see are demonstration cost figures. And all you get for your pains is the following stall, wrapped up in a dozen different ways: "If your prospect wants to see the truck bring him in-take him over to the showroom, etc."

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Every time I hear a sales manager hand out that line, and 90 per cent of them do, I laugh out loud and end up by telling them to try bringing one in themselves some time. I'll bet you my new radio set to your last year's straw benny or what have you that you don't want, that 50 per cent of the gray hairs in salesmen's heads come from trying to bring customers into showrooms. And besides, if a salesman does succeed in bringing in a prospect after days of persuasion, which in itself is an occasion worthy of celebration, nine chances out of 10 the model the customer is interested in is either sold or sent to another branch. This isn't funny, it's tragic-it happens every

A complaint against the practice of selling trucks from paper. It's from a truck salesman, who, because of the controversial aspects of this subject, desires to remain anonymous. He argues that prospects want to see the trucks they are buying. Reactions of salesmen and managers are invited.

day all over the country and sales managers wonder why we salesmen don't get results.

But it's a different story when the manager is out trying to get an order, He sees to it that he gets the cooperation denied us. Here's an actual case in point and from my talks with other salesmen, it isn't uncommon.

Not very long ago I managed to coerce a prospect into meeting me in our showroom one morning at 11. I was on the job at 10.30 that morning, but discovered that the model my customer wanted to see was not on the floor. I explained my predicament to the sales manager and got the usual line. He suggested that I show model so and so.

"But," I exclaimed, "that model has a different wheelbase, smaller engine . . ."

"Yes, I know that," replied the sales manager, "but can't you explain to your customer that the one you are showing him will give him a good idea as to the one he wants?"

After tumbling all this over in my mind I decided to let the manager do the explaining while I listened, reasoning that maybe he had a line that he could put over on this baby with whom I knew I couldn't reach first base.

When the customer arrived I brought out and introduced the manager. He started right in, but after talking about ten minutes the prospect interrupted him and said: "But where is this wonderful truck you're talking about? I'd like to see it; as a matter of fact that's why I made this appointment with your salesman."

"Well-l-l," drawled the sales manager, "unfortunately we don't have the particular model you're interested in here at this moment; in fact the only one in the territory is at present in our 'Squedunk' branch." (City about 100 miles away.)

"That's too bad," the customer replied, preparing to leave. "I must buy a truck within the next day or two. I would have been pleased to look yours over, but since you haven't the

TURN TO PAGE 34, PLEASE



## HOW TO CUT THE HIGH

O-ACCIDENT drivers are money makers, be they drivers in fleets of two or 1000 trucks. It is within the ability of every fleet owner, large or small, to develop and capitalize this type of driver.

While great progress has been made during recent years to reduce the high cost of accidents, there is still plenty of room for even greater and more universal achievements. Unfortunately many operators for divers reasons have not seen fit to give the matter the attention it deserves. Perhaps the chief reason for this disregard lies in the fact that they do not appreciate the costly significance of accidents, or in what manner and how much accidents actually are costing them.

Accident cost is both indirect and direct, with the former often considerably greater than we suspect. Damage to company reputation is a form of indirect accident cost. Company reputation, like character, takes years to build up; yet moments may destroy it. As for direct cost, an insurance policy does not pay all losses incurred by accidents. Unless covered for collision, insurance does not pay for damage to your own vehicles or accident repairs. Besides, high accident experience costs money in high premium rates. Another direct cost is the hiring of temporary drivers, unfamiliar with the routine of work, to replace men injured, involving loss of time for their instruction, etc. The hiring of temporary vehicles to replace those towed in for repairs is another direct cost. Finally losses resulting from delays in delivery must be considered as a cost.

Aside from the humanitarian standpoint, which in itself justifies the expending of effort to reduce accidents,
these cost elements show why any plan
designed to prevent accidents pays.
That accidents can be curtailed, life
and money saved by proper control
and management is no idle fancy.
There are too many excellent examples
to the contrary. And that it is not
hard to set up and follow through a
no-accident plan is equally true. Excellent testimony to the fact is available in any big city today.

There are many plans, but probably the most effective plan, according to the experiences of a large number of fleet operators in various vocations is one that combines mechanical safety, By MARTIN J. KOITZSCH

supervision and education. But no plan, however good, can be successful unless safety is taken seriously by every executive in the organization, from the president down; otherwise interest, the life-blood of the plan, will not be transmitted to subordinates. Furthermore, a safety campaign should not be contemplated unless done so with the idea of permanency. A short-lived campaign is of little value—to get results it must be continuous, carefully planned, with occasional special features sprinkled in to reawaken interest.

The purpose and effect of a campaign should be: (a) to prevent loss of life and limb on the part of both employees and the public; (b) to minimize property damage and keep

### ANOTHER WAY OF MAKING MONEY

The economic loss from motor vehicle accidents in 1930 is estimated at \$1,000,000,000. The human toll is just as shocking, 32,500 killed and 1,000,000 injured. While this summary applies to all motor vehicles, it should be of interest to all fleet operators to know just how much of this billion dollar expense each has incurred and how the share of each can be reduced in the future. This article tells how to reduce accident costs by approaching the problem from the driver angle.

Next month Commercial Car Journal will publish another article on safe driving explaining how comparative accident records are developed and used. vehicles in use; (c) to reduce the cost of damage claims or liability insurance; (d) to reduce the cost of claims by employees or compensation insurance; (e) to make the driver's job more interesting and attractive through contests, bonuses, etc.

Here are the important items of a workable plan already in use by many operators. They apply with few exceptions and with slight modifications to all concerns, whether they be small, employing from two to 10 drivers, or large, with hundreds of drivers on their payrolls. Each item will be taken up and discussed separately and briefly.

#### The Plan

Mantaining safe equipment
Proper supervision
Appointing a Safety Director
Organizing safety committees
Selecting and instructing new men
Arranging safety meetings of employees
Setting up standard rules for safe

driving Establishing comparative accident records of individual drivers and garages

Investigating accidents and exercising discipline

Utilizing safety posters in garages and on trucks

Using bulletins and dash cards
Publishing articles in employee magazines, if any

Awarding prizes and bonuses for good records

Running special short campaigns

#### Safe Equipment

Proper condition of vehicles is of prime importance. Mechanical parts having to do with safe driving deserve more frequent and careful inspection than they usually get. For example, brakes should be tested daily and linings should be removed before they become so badly worn as to become dangerous. Proper headlights are vital to safety. Bad bulbs should be replaced promptly and headlamps should be properly focused.

#### Safety Director

One man should be made responsible for all safety work. He may be designated as the Safety Director and it is his duty to keep in close touch with every detail of the program. In large organizations the man appointed will devote his entire time to supervision with such assistants, inspectors, or committees as circumstances may re-

TURN TO PAGE 43, PLEASE

## COST OF ACCIDENTS



#### A SAFE DRIVER IS:

Alert Cautious Considerate Reasonable Loyal

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#### A SAFE DRIVER KNOWS:

Traffic rules
Company policy
When his truck needs attention

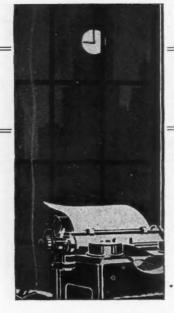
#### A SAFE DRIVER ENJOYS:

Personal satisfaction Honor Awards Bonuses

SUCH A DRIVER CAN BE DEVELOPED-THIS ARTICLE TELLS HOW

The Commercial Car Journal

August, 1931



#### Will the N.A.C.C. The other Balk Formula? day in the presence of

a man who has frequent contact with truck manufacturers we waxed enthusiastic about the fact that the Society of Automotive Engineers had decided to work on the problem of a standard truck rating formula. "Devising the formula," we said, "will be a tough job, but I think enough interest in the matter has been displayed by capable engineers to make me feel certain that the truck rating committee will come up with a standard formula."

"A tough job is right," was his remark, "and I think it will be a still tougher job getting the National Automobile Chamber of Commerce to accept any formula, no matter what it is."

Not having given this phase of the subject any thought, we had no retort other than an evasive "I don't think any trouble need be anticipated from that quarter."

"No?" and he made the query sound as sarcastic as possible. "Then you may have another think coming. As you very well know truck manufacturers have discussed truck ratings at many of their N.A.C.C. meetings. That nothing came of the discussions is an indication that opinion was set against anything being done about ratings."

### into History

Peering Back Believe us when we say that our mind worked rapidly while he was

speaking his bit. And it actually developed an idea which we hastened to get rid off.

#### HOURS AFTER

"The trouble before-and I don't mean to be funny when I say thisis that the N.A.C.C. tried to do something about ratings when it should have encouraged S.A.E. action. It was natural for manufacturers to look at the problem not from the strictly engineering standpoint but from the strictly sales angle. And prejudice won't give you the correct answer to an engineering problem. At that time manufacturers thought that to do anything about ratings might affect sales adversely. The heavyduty and light-duty manufacturers saw certain benefits in the byguess-and-by-gosh rating methods then in use, each feeling that he possessed a certain advantage over the other and that to give up the advantage might prove disastrous. Which was a gardy example of self-deception when you consider that manufacturers had sufficient evidence that buyers were disregarding rated capacities. were buying transportation at a time when the truck's influence was constantly expanding. Doubtless they were looking for trucks that could haul, say, 4 tons, but weren't buying trucks rated at 4 tons.

"Mr. Pulcher himself nailed the sales prejudice (in its coffin, I hope) when he said: 'The truck rating problem will be solved only when it is removed from prejudiced departmental influence and considered strictly from the standpoint of performance on the open highways.'

"Indeed, under the circumstances, it would have been miraculous if the N.A.C.C. had solved the truck rating problem."

### It's Passable

If Obstacle Further words were bandied, and then the argument was dropped.

But not permanently because the thought remained with us that if the N.A.C.C. presented an obstacle to acceptance of a standard rating formula-in the event one were devised by the S.A.E.—that obstacle had better be anticipated. So, calling logic to our assistance, we arrived at reasons why the N.A.C.C. should not be deemed an impassable obstacle.

Let's assume that the S.A.E. has sanctioned a rating formula which possesses merit and which the N.A.C.C. has been asked to approve. Three courses are open to the N.A.C.C. as an organization: to approve, to disapprove or to disregard. If approval is unanimous it may be assumed that adoption of the formula by individual members likewise will be unanimous. If approval is by majority, it may be expected that the majority will adopt the formula, and that the minority won't, but may drop into the fold, one by one, later on.

In the event of unanimous disapproval, the cause will not be entirely lost, because not all truck companies are members of the N.A.C.C., and several or all of them may elect to view the rating formula as a new merchandising idea. Thereafter the formula battle would be fought on the sales front with operators deciding the issue with their orders and with insistence that trucks entered in competitive bidding be rated by the S.A.E. standard rating formula.

If disapproval is by majority, the minority may be expected to show their disapproval of the disapproval by making good use of the formula.

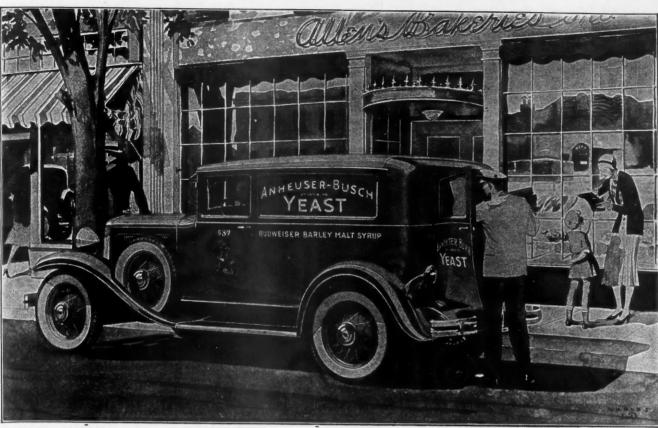
If the N.A.C.C. disregards the issue, it becomes a case of every man for himself. Some may and others may not adopt the formula.

#### Someone Will Rear the Child

So, no matter what the decision, a meritorious for-

mula has a splendid chance of finding foster-parents to rear it and give it an opportunity-which is all it will ask-in the truck world to prove its worth.

Naturally, the influence of the N.A.C.C. is not to be ignored or minimized, but neither is it to be considered so destructive as to envelop the activities of the S.A.E. truck rating formula committee with an air of futility.-G. T. H.



The New Chevrolet Sedan Delivery

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## Proved Economy is winning fleet business for Chevrolet



Hardly a day goes by without some new and famous name being added to the long

list of Chevrolet fleet owners. Largely responsible for these sales is Chevrolet's outstanding economy. For it is a matter of record among many Chevrolet fleet operators that the Chevrolet Six costs less to run than any other motor vehicle. As one big industrial organization has written: "Our records are taken from travelers' expense sheets and our expenses include 50 per cent yearly depreciation; \$100,000 liability and \$5000 property damage insurance; garage charges at home as well

as on the road; gasoline; repairs; oil; in fact, everything that could properly be charged against automobile expense. In our experience with our ninety-one Chevrolet cars, we find that the total mileage was 1,854,202 miles and that the average cost per mile was \$.04. The results are quite pleasing to us, in view of the fact that it proves that the six-cylinder car has been run more economically than the four-cylinder car." Backed by such convincing evidence of Chevrolet's exceptional economy, Chevrolet dealers are particularly well equipped to win sales in the highly profitable fleet field.

Passenger car prices range from \$475 to \$650. Truck chassis are priced from \$355 to \$590. All prices f. o. b. Flint, Michigan. Special equipment extra. Product of General Motors. Low delivered prices and easy G. M. A. C. terms. Chevrolet Motor Company, Detroit, Mich.

#### **NEW CHEVROLET SIX**

The Great American Value

The Commercial Car Journal

## A TRUCK ASSOCIATION



9.15 A. M.—Secretary arrives breathless, and calls, "Good morning, boys. Mornin', Miss Brown."

Chorus from two outside men and Miss Brown: "Good morning, Boss."

9.18 a. m.—Secretary attempts to hang up coat and hat, and both fall to floor, meaning the coat and hat. Outside men and Miss Brown leave 'em lay. Secretary bends heavily, and recovers both, glaring at outside men. "It's a wonder," he gasps, "that you

two guys wouldn't move once in awhile. First thing you know you'll get callouses."

9.19 a. m.—From outside men: "Ha, ha, that's a good one, Chief! Geez, you say the funniest things!"

Secretary, modestly: "Well, I can't help it. They just come to me!"

Miss Brown appears to strangle, and Secretary observes, "It must be something you ate."

9.22 a. m.—Secretary takes seat at

his desk. Rubs hands vigorously, and declaims, "Boy, I sure feel like a good day's work today. What's in the mail, Miss Brown?"

9.25 a. m.—Miss Brown concludes powdering nose, rises, and with a Ziegfeld swing of hips, approaches desk of Secretary. "A lot," she answers, smothering yawn.

"Am I keeping you up?" snaps Secretary.

"Nope," barks Miss Brown. "I only

## SECRETARY TELLS ALL

By TOM F. BARRY

Executive Secretary, The Merchant Truckmen's Bureau of New York, Inc.



stay up for my friends. Anyways, here's six circulars and two offers of 'How To Improve Your Mind in Six Easy Lessons.'"

"You ought to be interested in that, Chief," observes outside man No. 1.

"Ha,ha,ha!" from outside man No.2.
"Listen," snarls the Secretary.
"How would you and the other Mug
like to go out and get some dues?
And don't come back until you get
'em!"

#### EDITOR'S NOTE

In the publishing business there's a saying that "light reading and light clothing are in demand in the hot summer months for the same reason." That's why we approached Tom Barry, executive secretary of the New York Merchant Truckmen's Bureau, and asked him to give us an account of a routine day in the life of a truck association secretary. We knew he would tell the tale humorously. He did, and we present it first as a satirical piece of writing intended to win sympathy for truck association secretaries everywhere, and second, as a bit of light reading for an August day that can be tossed off together with a bottle of cold home brew and a limburger cheese-bermuda onion sandwich. We warn readers that if they detect an odor they may blame Mr. Barry or the sandwich, and let the beer belch (should we say eructate?) where it may.

"A plazure," from the outside men. "Anything else, Chief? No? S'long, Brownie! B'by, Chief. We'll be seein' you, we're afraid!"

(Door slams, and drowns out Secretary's remarks.)

"As I was sayin'," continues Miss Brown, "we have circulars, personal letters from your friends, and fourteen complaints. Personal letters? Oh, Jimmy Whoozis writes to know if you'll send him ten dollars. It seems he's stranded in Atlantic City an'-Oh, an' here's one from Joe Smack. He's trying to get a job as a prohibition agent, and he wonders if you'll fix it up for him. He wants you to say that the time he shot that lad in Flatbush, it was all in fun. And besides, he says, the fella he shot was only an insurance agent, and he adds, 'Since when was it a crime to shoot an insurance agent?' Yeah, that's what he says.

"An' here's one from a girl who says she met you at a convention and you told her that if she ever got tired of her husband to look you up. She writes that her husband annoys her now, and she's coming to New York. She wants to know if you'll meet her?

"An' here's another one from the secretary of a middle-western truck organization who wants you to send him, at our expense, copies of all our bulletins for the last three years. An'..."

"File 'em," snaps the Secretary, "in a waste basket. And wire that guy in the middle west that we're not acting as a public library this season.

How about the complaints?"

Miss Brown shifts her gum, leans against the desk, and pats her bob. She begins to talk rapidly:

"The President writes he didn't like that crack of yours in the last bulletin. The one which went, 'When bigger boobs are made, New York truckmen will be their fathers.' He says you ought to be more careful what you say.

"The Treasurer writes that our bank balance is now lower than it has been in five years, and he wants to know what you're going to do about it. He says you should do something, but he doesn't say what!

"The First Vice-President writes in to say that his son Maurice is now on the loose, having been given a vacation from school, and would make a valuable employee for the organization. Maurice, says his Vice-Presidential Nibs, will consent to work for \$80 a week, and prefers a five-day week.

"I have here," gestures Miss Brown, "a letter from the union delegates, in which they don't seem to think you're the best lad in the world. They seem to hope you break your neck, or something. Oh, such language! I'm surprised at you, Mr. Secretary. If Mother knew I had to listen to such talk, she wouldn't let me stay here a minute."

10.07 a. m.—Telephone rings, halting Miss Brown's complaint. Voice says:

"Is disa de Truck-a-men's Asso'? Dees is Tony Capoosh! Capoosh!

The Commercial Car Journal

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August, 1931

## A TRUCK ASSOCIATION SECRETARY TELLS ALL



Wassa mat, you deef? Tony Capoosh. Kay, ow, poo, 0000, 0000, essss, ahaithch! Capoosh! Aw ri'. I wanna tell-a you a-wan t'ing. De Assoc' no good! I quit! I'm-a troo! I gotta de work in-a house, Kablowsky, Skayhooski, Moweeski, and O'Brien, see? For twenny-seven year I do-a dis-a work. Den, las' w'k, one of our mem' he cutta da price, an' I lose-a da woik! I killa dat #\$%-&"&-%\$#". I shoot 'em da pants! What-a you do, huh? I make-a da trub' if you no make-a him give-a back de woik. Me no want-a de let'. Me wanna de pineap' t'rown in-a his place. Me wanna da machine gun to shoot up de woiks! Me wanna . . . Ah, go to hell! You and da Asso' no good! G'by!"

10.27 a. m.—Secretary appears dazed after conversation with Tony. "Let's write some letters," he tells Miss Brown. Secretary is about to begin dictation, when telephone rings. The Association's President is on the wire. He says:

"Hello, Secretary? So you finally got, there, huh? It's a wonder you wouldn't get in on time. I called you up at 7.45 a. m., and I couldn't get an answer. You don't get in until 9, huh? What have you got—a bank down there? Let it pass . . . .

"What I called you about," continues the President, "is, that I didn't see my name in your last bulletin. Now you know I don't give a damn about publicity; in fact, I don't like it, as you well know. But, as long as you're making such a helluva fuss about what the Second Vice-President is doing, you might as well mention my name!

"Another thing, I got a swell idea. We should get some fancy calendars made up and distribute them to our members. We could print on 'em the name of the Association, then my name as President, and then, in smaller type below that, the fact that I'm connected with the firm of Muggins & Meegans, Inc. And I have just the man in mind to get up a nice calendar. He's my brother-in-law and

he works for a printing house on a commission basis. He'd give us a good break. Get this right, now, I don't want anything for myself! Not a chance! I just want to do the members a good turn! Get the idea? I'll talk to you about this tomorrow. I'll be down town anyway, so I'll drop in. I'll bring the brother-in-law with me!"

11 a. m.—Office door opens. Voice says: "Furniture repairs? Got any furniture repairs? Nice furniture repairs, boss."

"No!" roars Secretary holding his head.

11.05 a. m. — Door opens again. Grim female enters: "Are you the Secretary?" she asks. "Well, my name is Mrs. E. Throgmore Blue. I represent the Horse Ease Society, Inc. Think of it, Mr. Secretary, as we stand here talking, there are 42,000 horses walking around New York who are thirsty. Their throats are dry, they are tired, and they need a drink!"

"Lady," interrupts the Secretary, "them and me both! Nothing today. This is an organization, and we have no funds available for contributions."

"But," persists Mrs. Blue, "outside the weather is hot. The streets are giving off heat vapor. The poor horses are plodding along, thinking of purling brooks and lilting streams. Oh, how they want a drink, and our work, that of the Horse Ease Society, Inc., makes it possible for them to relieve their thirst by our sanitary drinking troughs placed at strategic points around the city. Contribute something. Just a little. A paltry hundred dollars. A miserable half a hundred. Just a little! A tithe! Anything!"

11.25 a. m.—Secretary reaches for Ole Betsy, concealed in his desk. He rises, and, with a mad glint in his eye, stalks toward Mrs. Blue. She screams and flees. Secretary resumes desk and groans loudly, while Miss Brown fiercely polishes her nails a deeper carmine. For ten minutes the Secretary looks longingly at the Colt automatic he holds in his hand. Shakes his head and replaces gun in desk, muttering, "That last policy will not be incontestable for another two months. I'd better wait!"

11.42 a. m.—Secretary starts to resume dictation, when phone rings and a member is on the wire. The member says:

"Hello, Secretary? This is John Mousey, of the Eighth Street Mouseys, 'hauling anywhere, anytime, anyplace, and anyhow.' How are you? Fine, fine. I want to ask you a question—just a simple little question. It's as follows:

"Why are truck regulations different in the States of New York, New Jersey and Connecticut? I mean, why are they different? Why aren't they the same? You don't know you're sure? Well, you're a fine Secretary, I must say. All right, if you can't answer that first simple little question, how about this one:

"I went over to Jersey the other day with truck and load combined weighing 68,000 lb. Unfortunately, the truck went through the street and had to be taken out by the police emergency squad and the fire department. Could you speak to somebody over there and tell them they had no right to arrest my driver? You couldn't, huh? Well, what good is the Association? What do you think I pay my dues in here for? What do you ever do for me? I just break up a little pavement, and you can't do a thing for me. Listen to me, Secretary, I'll take this up with the Executive Committee. You can't get away with refusing me assistance!" Wham! The Secretary recoils from the phone



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as his eardrum almost ruptures from the force of the broken connection.

12.02 p. m.—Phone rings again. Gentle female voice says: "Is this you, dear? How have you been, sweetheart?"

Secretary says he's doing as well as can be expected, and politely inquires to whom he's "sweetheart" now? Voice explodes:

"I'll report you to the telephone company. Why didn't you say you weren't my husband!" Bang! Another broken connection.

12.10 p. m.—Weakly, the Secretary turns to Miss Brown and says, "Go to lunch, and if I'm dead when you return, tell them it hurts me more than it does them." Curtain descends as Secretary pecks at typewriter, vainly trying to answer some personal letters.

1 p. m.—Curtain rises as Miss Brown returns from lunch humming, "Cuppa coffee, a sandwich, and you."

Door opens again and secretarial comments are prevented by entrance

of member, a Mr. Birzo. Secretary rises hastily.

"Well, well," he chants, "if it isn't Mr. Birzo. How are you, Mr. Birzo? You're looking fine."

Mr. Birzo groans. "I don't feel good," he protests. "I'm not myself at all. Had an operation. It was my gall bladder. The doctor said—it was Dr. Towser who operated, and he's the best in the city—that it was the worst gall bladder he ever saw in his life. Why, he . . . ."

The Secretary signals to Miss Brown.

"Oh, Mr. Secretary," interrupts Miss Brown sweetly, "while you were out to lunch the President phoned and he wants you to call him right away."

"Of course, of course," the Secretary agrees. "I wonder," he says, turning to Mr. Birzo, "if I might make an appointment with you for next week and hear about that operation. I'm certainly interested because some day my gall bladder, if not already destroyed by drugstore gin, might decide to go places. Next week, eh, Mr. Birzo?"

"I got plenty of time," returns Mr. Birzo. "You go ahead and make that call, and I'll sit right here . . . ."

2.05 p. m.—Secretary mops forehead and glares at the door through which Mr. Birzo has just departed.

"Quite an organ recital," observes Miss Brown. "Ask me anything about Mr. Birzo . . . anything . . . . and I'll tell you right off."

"No matter," declares the Secretary, "how you slice it, it's still baloney! That guy didn't have a thing on his mind except to find out, from my long association experience, whether or not he might expect any further trouble from his gall bladder. It's an old organization custom. And there's the telephone once again.

"Hello? Yes, Mr. Lawson. And how are you today? You complain of a lack of cooperation among the members of the Association? I'm sorry to hear you say that, Mr. Lawson. Very sorry, indeed. Is that so? Really? Tsk, tsk, tsk, tsk, that's terrible! He did, eh? The big stiff! But, we all have our moments when we fall from grace, Mr. Lawson. No, I really can't tell you if he goes to church or not, Mr. Lawson. If he did, he wouldn't cut your prices, you say? Probably

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## A TRUCK ASSOCIATION SECRETARY TELLS ALL

not, Mr. Lawson, although I've seen a few church members pull some fast ones in my time, Mr. Lawson. How about the Halls-Mills murder case, Mr. Lawson? I should be ashamed to bring that up? Well, maybe I should, and maybe I shouldn't. Some do and some don't, Mr. Lawson. I'll speak to him about that price cut, Mr. Lawson. Yes, indeed, I'll do it today without fail. G'by."

Secretary mops brow with renewed vigor and mailman enters. Carrier hands Miss Brown an envelope as the hands of the clock point to 2.35 p. m.

"A check for dues?" asks the Secretary eagerly.

Miss Brown pouts, a la Nancy Carroll, and withdraws sheet of paper from envelope. "No; no check," she answers. "Looks like a letter. Here it is. It's from The Walla Trucking Co."

"God!" exclaims the Secretary.
"Poetry! Let's read it. It's captioned, 'Pull Together.' It starts:

"'Truckmen should pull together, In fair, or stormy weather. They should not fight or quarrel, Or act like a squarrel.

They should be strong and brave, Act like men and not a slave,

They should . . . "

"Enough!" shrieks the Secretary.

"And he says he 'wants it—the verse—inserted in the next bulletin.' Over my dead body, Miss Brown! That's the third time he's written one of these things. I made a mistake when I put the first one in. It was good, except that Kipling wrote it first. Drat that telephone! You answer it, Miss Brown. Tell them I'm in conference. Tell them that President Hoover's secretary and I are busy on a plan for truck owners to operate trucks without a license."

".... I'm so sorry," breathed Miss Brown into the telephone, "but he's in conference. Yes, with a big Government official who came all the way from Washington to obtain his views. Why, he has so views! He certainly has views! All God's chillun got views, Mr. Razzer. I'll have him call you. Oh, you won't be in? No? I'm sorry to hear that. Well, maybe you'll be in some other time. You'll call again? Thanks, so much, Mr. Razzer. No . . . . No . . . . I couldn't possibly go to dinner with you. I never eat dinner. . . . No, just a hearty lunch. . . . Oh, you're a kidder, Mr. Razzer? Why, you are so a kidder, Mr. Razzer. I'll betcha you're married, Mr. Razzer. I betcha you got a large and thriving family, Mr. Razzer. I...."

"Hey," howled the Secretary, "will you hang up the phone on E. Wilberforce Razzer? The hour is now 3.40 p. m., so, if we are going to get this dictation done, we might as well do it now!"

3.45 p. m.—Secretary has made considerable progress in his first letter when door opens and three grim, tough-looking individuals stalk into office. Man in lead speaks:

"'Lo, Cullie. You the Secretary? Yeah? Well, me an' me two pals wuz sent down by Joe Foozer. You know Joe, don't you? He's one o' your members, so yuh ought to know him. W-e-l-l, Joe told us you wuz havin' some trouble collectin' dues from members, so he tells us tuh come down here an' maybe you got somethin' fer us to do in a collectin' line. We'll take it over on a percentage basis—get me, fella?"

Secretary reddens and is about to explode. Observing an ominous bulge in the pockets of the trio, however, he



decides to be calm . . . . and pleasant.
"Er, how-a, er, would you collect
the dues?" he inquires feebly. "What

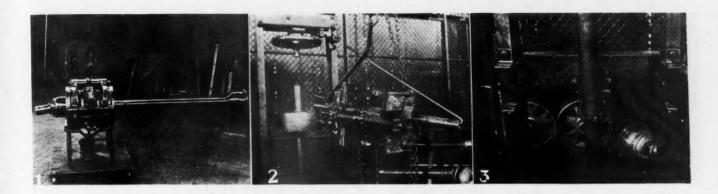
would be your system?"

Spokesman for trio sneers and rubs his nose with tip of his thumb. "Easy," he declares. "We go in an' talk to 'em nice, see? We tells 'em they owe dues to the Association, and we'd like 'em to get it up. We tells 'em if they won't give us a check now, that we'll come back . . . . later . . . .

"Then," went on the spokesman, "the next day we step in the guy's joint again. That is if we don't get no sugar the foist time. I starts off nice the second time, an' asts why he didn't put it on the line. He giz me a line of horsefeathers, an' I slaps him in the pan. I sez, 'That's for forgettin,' I sez. If he makes a pass at me, we pulls the roscoes an' chucks the biscuits against his ribs. Then I sez, 'Do I take this on the legit, or do I stick up the joint?' I sez. Then I



## FLOOD OF GULF IDEAS



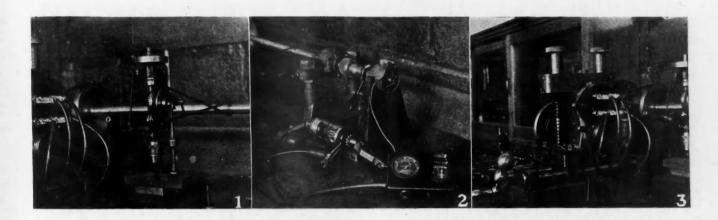
#### Remove, Overhaul and Reinstall Brake Assembly

Special jack, hoist and press attachment make this a one-man job all the way through. Time saved is about three hours.

Dropping the brake and propeller shaft assembly out of a White truck commonly calls for the combined (more or less) struggles of three men. Putting it back takes the same number of men but harder struggling.

Contrast that method with the Gulf shop plan. A special stand on casters is rolled beneath the brake, weight

is taken off the bolts by a hydraulic jack and the assembly lowered to traveling position, 1. It is pushed over to a press and lifted by a chain hoist with a special Y hook which engages both ends of the cross tube, as shown in 2. The shop press cross channel, at the front, is hinged and it is opened to receive the upright shaft 3. The shaft is clamped in place by a plumber's chain vise bolted to the rear cross channel. The brake assembly is then lifted off and placed on a stand on the work bench by sliding the chain hoist along a swinging boom. Reassembly is carried on in the same manner.



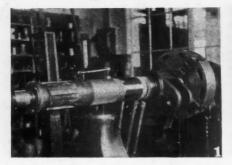
#### Magneto Repairing

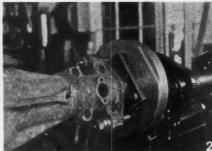
A simple point grinder gives a full-face contact surface in less than 2 minutes; an armature test and complete magneto test put an end to comebacks.

The point grinder comprises a small bench drill driven by round belt directly from countershaft. Points are clamped in drill chuck and revolved at high speed on a double-faced oil stone. Excessive grinding is avoided by the fact that the oil stone stops wiggling when the point is finished. The point surface is not only smooth but it is dead flat which makes complete contact.

Magneto armatures are tested at the end of the bench countershaft. A battery type distributor is supported in a wooden bracket and driven by a chuck on the shaft. Battery current is fed through the armature and the high-tension current is passed through a Stromberg Motoscope. Tests are continued long enough to check defects in wiring or insulation which show up only after continued for 15 minutes, or more, to show up obscure defects in insulation or wiring.

Because the fleet is well standardized a simple type of magneto test fixture is sufficient. Wire leads are brought through the workbench top and are connected to spark gaps and a Motoscope in the cabinet behind the magneto. Belt is tightened by a lathe cross feed mechanism and the magneto is held in place by a cross piece moving up and down on two long studs. Note that two springs move the top bar upward out of the way when the nuts are unscrewed.







#### SALVAGE AND REPAIR

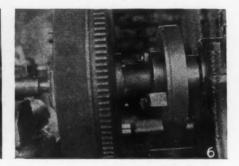
Rear axle housings costing about \$225 are salvaged in 10 man-hours, other jobs, of course, show smaller savings.

Any part which arrives in the junk box in this shop has, like a faithful old horse put out to pasture, earned its retirement. Before it reaches that haven of rest it is reclaimed, perhaps several times, by welding, machining and other processes. In many cases, worn places are built up by bronze welding and then machined to standard size, in others worn circular openings in parts are restored to standard size by boring out and inserting bushings. Of course, some jobs call for the use of both methods.

Both building-up with welding and rebushing are employed to reclaim the rear axle housings. The tube is filled out by bronze welding and then turned to standard size in a lathe (1). Welding takes about one hour. The next operation is that of boring out the housing ends. The housing is bolted to the lathe face plate as shown in (2) and the outer end revolves within a special bearing type support (3). The tool is a substantial bar supported on an extension on the tool slide. Machining both ends of the housing and two tubes takes about 10 hours. Bushings are turned from commercial heavy black pipe. After the housing has been rebushed once new bushings can be inserted without reboring.

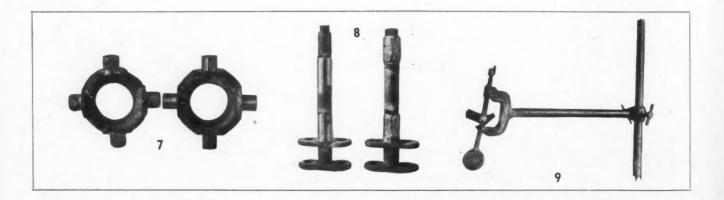






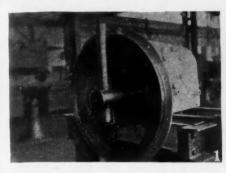
Bronze welding is also employed in the flywheel reclaiming job shown in 4, 5 and 6. The outer face of the flywheel which comes in contact with the clutch brake and the center bore wear. After welding the flywheel is mounted in

the lathe on a special jig (6), then turned as indicated in (4) and bored as shown in (5). Welding takes about one hour, lathe work 2½ hours. The part is worth about \$18.

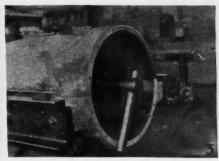


A host of smaller parts are saved by welding and simple finishing operations. For illustration, accelerator pedals which wear at one point are fastened in an adjustable clamp (9) and built up with bronze. A little filing and grinding smooth the welded surface. This job takes about 15 minutes for welding, 5 minutes for grinding.

Universal joint yokes (7) are saved by welding and turning, the welding taking about 20 to 30 minutes, the turning in a lathe 20 minutes. Likewise a pair of brake shafts (8) are filled in within 30 minutes and turned, two surfaces on each shaft, in one hour. A large assortment of other parts are salvaged in a similar manner, every day.



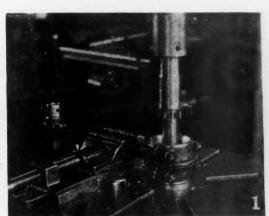




#### Facing Tools

Two tools of similar design, one for clutch housings, the other for transmission housings, turn the respective flanges true within .001 in. in 30 minutes, compared with two to three hours for a less accurate job of hard filing.

The transmission tool (1) comprises a heavy shaft and an arm. The shaft extends through the transmission case and is carried in a ball bearing at each end bolted in place of the transmission shaft bearing (2).



#### **Cutting Bearing Fillets**

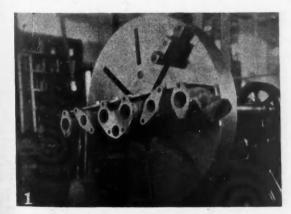
An expanding tapered jig and drill table vise hold connecting rods in place while milling cutter machines fillets on connecting rod bearings. Time required: both sides of two bearings, 5 minutes.

The jig, a simple cone-shaped turning from

#### Machining Manifolds

Exhaust manifolds are mounted on the face plate of a lathe and the flanges are trued by light cuts.

A heavy angle forms the jig for mounting on the face plate. Holes are drilled in the horizontal side of the angle to match holes in the manifold and it is suspended by cap screws.

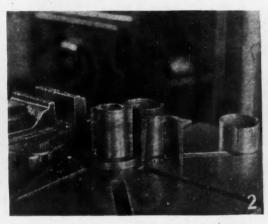


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The arm is made of cold rolled bar stock ground to size and fitting in a reamed and honed hole in the shaft. The cutting tool is adjusted and held in place by means of headless set screws.

Automatic feed of the cutter is provided by a long feed screw with star head and knocker, as shown in (1).

Arm, cutter and feed of the same types are used in the engine housing tool (3), the principal difference being that the shaft has a flange on the end which is bolted to the crankshaft flange.



bar stock, is placed in the center hole in the table of a large vertical drill. Two tapered half-cups are placed over the cone and shim stock used to bush to bearing size. After the rod is placed over the jig the tapered halves are driven down in place by hammer and drift locking the bearing in place. The vise is then tightened for additional support.



#### Boring Steering Gear

Restoring a steering gear housing to further usefulness is so simple that the work is done by a machinist apprentice. A jig holds the housing in place on the table of a vertical drill. The housing is bored, the sleeve inserted and finish bored in a total of  $2\frac{1}{2}$  hours.

## WHY DO MECHANICS

GENERALLY speaking, the success of an organization can be gaged by its ability to hold its employees. Nothing is more wasteful than mechanic turn-

over; that steady stream of mechanics going into and leaving service shops. It takes time to train men—to familiarize them with shop routine and with the use of various kinds of shop equipment and tools. And time represents productive hours; a considerable factor in high operating costs.

We all know that high turnover costs money, and that it is much higher than it should be, but we are not all familiar with the causes. Perhaps if we could answer the question asked above, "Why do mechanics leave home?" much could be done to remedy the condition.

In an effort to determine the causes, we found, after a survey of shops on the West Coast, that the chief reason for the heavy turnover of automotive mechanics could properly be placed at the door of employers. To be specific, we found that a large number of mechanics were preparing themselves through study for professional work in other fields, such as accounting, law, business, salesmanship, etc. This, of course, is a natural and commendable characteristic of an ambitious man, and is not to be deprecated, but it does not help the shop turnover situation. Shop superintendents can do two things about it. First, determine when selecting an applicant whether the job is sought merely as a means to an end-a temporary job satisfactory until the applicant is prepared to enter another field. To take in a man with such intentions is expensive; he is a liability, wasting the firm's time and money in needless training. There is another type of mechanic, however, whose original intention it was to stick in the industry, who also is preparing for pursuits in other fields,

West Coast Operators Asking Themselves This Question Sought the Answer, Uncovered It and Found That Something Could Be Done to "Keep Mechanics at Home"

By E. C. WOOD

Transportation Superintendent of Pacific Gas & Electric Co., San Francisco, Calif.

#### A Dozen Reasons Why Mechanics Knock Off

(1) Arbitrary Limitation of Salary.
(2) No Incentive Wage and Promotion Plan. (3) Lack of Personal Contact Between Executive and Employee.
(4) Absence of Sufficient and Proper Tools. (5) Untidy and Poor Shop Condition. (6) Poor Fellowship.
(7) General Disinterestedness and Discontent. (8) Unnecessary Heavy Lift Jobs. (9) Disrespect. (10) Unfairness. (11) Intolerance. (12) Inability to Get Men to Pull Together.

but only because he found conditions in his chosen vocation unsatisfactory. Employers can do something about such situations by making an effort to eliminate the elements that make his job unsatisfactory. These are mostly controllable elements, and they are many. Here are some: arbitrary limitation of salary; no incentive wage and promotion plan; lack of personal contact between executive and employee; absence of sufficient and proper tools; untidy and poor shop conditions; poor fellowship; general disinterestedness and discontent; executive inability to get men to pull together: arduous and unnecessary heavy lift

jobs; disrespect; unfairness and intolerance, etc.

It is within the power of the wise superintendent to reduce greatly this costly replacement

stream with certain definite measures such as proper selection of men; through training; planning proper shop procedure; equipping the shop with proper tools, and maintaining personnel interest and morale. While these factors represent sound rules of efficient organization, capable superintendents in addition must have an appreciation of human nature, must have a knowledge of manpower and understand the psychology of men working together in organization.

Unfortunately, employment is too often based on only a cursory examination of past record, experience, general appearance and ability of the applicant to express himself. The obvious thing to do, and the course which we pursue, is to take every care to scrutinize the past records of all applicants thoroughly. Not only do carelessly selected mechanics turn over rapidly, but during their short stay they are liable to irremedially damage an expensive piece of equipment. The call today is for a more highly developed type of mechanic, a man who not only performs his regular duties to the best of his ability, but one who also does things in addition to his specified duties if they advance the interests of his employer. Care at time of selection will assure the procuring of this type of man.

Another point to remember is that economical maintenance is based on inspections, adjustments and repairs being done in the shortest possible time, and that success here is greatly dependent on the character of the shop personnel, which brings us to the observation that the best mechanical help is always the cheapest in the end. When selecting applicants, it should also be borne in mind that vacancies



## \*\*LEAVE HOME?\*\*



The Commercial Car Journal

## WHY DO MECHANICS "LEAVE HOME?"

for higher positions should be filled within the organization.

The next step is to take the accepted applicant in tow and acquaint him thoroughly with the policies of the company, instruct him as to his work and shop procedure in general and keep in intimate touch with him until he is fully familiar with all the requirements of his job. Instruction should not cease after a few weeks, but should be continued permanently, and this applies to the entire staff. Teaching is the most effective means of maintaining interest and building up morale. This brings me to what I consider a fundamental condition for success in shop management-a contented and harmoniously working per-

The average man is loyal and anxious to respond to the right kind of leadership. With proper supervision, which presupposes an understanding of how to get men to pull together, this human characteristic can be capitalized. As I mentioned before, teaching is the most effective way of attaining this, together with close personal contact, and group meetings, where the men have an opportunity to air their troubles. Both men and management benefit by the intimate round-robin intimacies that ensue. Such relations create an impression of sympathetic appreciation of the men's troubles and grievances and give the management an opportunity to explain situations that otherwise might create mistaken ideas and lead to unwarranted discontent. Moreover, these man-to-man talks in the open instill confidence and give all a feeling of proprietorship and personal interest in the company welfare. Another very important touch in superintendent relations with the men, and which is woefully absent in some establishments, is the personal touch, little amenities and courtesies. Do not ignore the human touch—the friendly gesture. Disregard of these things often builds itself into a condition that brings real disaster to an organization.

#### Just Horse-Sense

To keep up interest just means the application of common horse-sense; the ways are many and diverse. This may require some effort on the part of the superintendent, but after all that is a part of his duties—an important part. He-must constantly out-think his men and keep them catching up to him because it is a trait of hu-

man nature to respect the man who knows as much or more than those beneath him.

Interest might be injected by playing on the reduction of repair cost; what can be done about gas consumption increase; amount of payroll; what reductions were made in tire cost, and other similar problems. The point is to keep thinking and starting new things—the men will try to keep up with them. After all, the difference between ordinary doing of work and increased efficiency is the difference in the initiative the men exert. The way to get this initiative is to simulate reaction.

#### Creating Interest

An opportunity for creating interest in actual work also presents itself to the wise superintendent with a capable staff of well-selected men. Mechanics given a chance to exercise their own initiative and skill and allowed to take the responsibility of their work, do their jobs better and like their work more.

Progressive promotion from the ranks is another essential factor in perpetuating interest and besides has a splendid effect on the morale of the organization. So that such promotions are extended where merited and to prevent any possible ill will, an analysis of each man's work is very necessary.

Last of all, remember that satisfactory relations can only be perpetuated by continuous attention to the principles outlined. Success in building up a smooth-working organization does not mean that the superintendent can shut himself up in his office and proceed to forget all about it. He must keep constantly after his most valuable asset, personal contactnever let up. To keep the respect of his men he must be fair and square in his dealings, tolerant, and sympathetic. Finally, the superintendent should always bear in mind that if the members of his organization know he is looking after their interests, he will get their cooperation, save his company money and himself a lot of trouble. With a happy, contented personnel, a superintendent can obtain results, which means: Less cost per mile.

Constant seeking of new plans; vacation schedules; premiums upon length of service; advancement both in pay and in the organization, and a pension plan, are powerful factors in making permanency in your shop staff and big dividends in efficient work.

Pleasant working environment and proper shop equipment are other elements that help mechanics to like and to stick to their jobs. A bright, clean shop keeps mechanics mentally alert and increases their productiveness. If the shop is a clean, orderly place, all of the men will be interested. On the other hand, if parts of trucks are scattered all over a dirty floor in puddles of grease, with some on toolcovered benches, men become careless and do slovenly work. While all companies cannot afford to redesign their shops along modern lines, they can keep them clean and tidy, and by so doing create a favorable mental attitude of the men toward their work.

Proper tools and their proper use play an important part in the satisfied and contented life of a mechanic. It is not a rare circumstance that finds a man reputed to be a good mechanic proving to be a failure due to the lack of sufficient and proper tools. Tool equipment, as a matter of fact, should be such that the skill of the mechanic is no longer the most important factor in the time required for the job. Tools should be as simple as possible, and their installation should be followed up by careful instruction as to the purpose for which they are intended and the method of applying them to the best of advantage. Even an experienced mechanic cannot always see at a glance how a tool which is new to him is to be applied. If he is not instructed, he will rely on old timeconsuming methods with the eventual penalty of being dismissed for slowness. Not only proper tools, but proper instruction is the responsibility of the management. Besides proper tools, managements looking toward betterment of working conditions for its men will furnish special equipment designed to relieve its men from needless exertion in handling parts. Easing fatiguing jobs by mechanical devices puts men in a better mettle for efficient work on the finer operations and expedites operations generally.

## SALESMEN TO SELL MUST HAVE TRUCKS TO SHOW

CONTINUED FROM PAGE 19

model I want I guess I'll just have to forget about it."

With that he picked up his hat and started to walk out, very apparently annoyed over the way we had misled him.

"Just a moment, sir," the sales manager hastily cried, lovingly grasping the prospect by the elbow. "If I arrange to get this truck from the other branch will you hold off making your decision until we get it here?"

"How long will that take?" the customer asked.

TURN TO PAGE 52, PLEASE

## WILL TRUCKS SOON BE SOLD WITH SERVICE INSURANCE?

The ideas expressed in this article are those of a man connected with one of the leading heavy-duty truck companies. He wishes his identity to remain unrevealed, fearing that should the name of his employer become known an undeserved degree of probability would be attached to his purely speculative remarks. The ideas are novel and may stir the imagination of readers, who, if they have additional thoughts on the subject, will find their contributions welcomed by the editor.

SALESMAN'S dream" of the time when truck manufacturers will sell their vehicles with a yearly guarantee against any and all repairs was visioned by a truck salesman, at a recent meeting of the Automotive Service Association of New York. While admittedly still in the dream stage and lacking in the solution of a number of details, the plan was presented in such form that considerable interest appears to be aroused in its possibilities.

Briefly, the plan is practically a factory operated, one-year insurance policy against collision, accident, breakdown and fire. The financing of this could be handled either by the factory direct or through a recognized insurance company. The cost would be added to the sale price of the truck or of the fleet, and would give the purchaser one year's operation of the vehicle with the assurance that he would have, during the year, no maintenance costs.

At the end of the first year the factory could, for a set sum, renew the guarantee for a second period and so on for the normal length of life of the vehicles. Whether it would be necessary for periodical inspection, before renewal of the policy, is one of the details which has not yet been worked out.



Under this insurance the manufacturers would perform all repairs and maintenance services for the purchaser without any additional cost to the purchaser. Rates would have to be worked out, of course, for various types of operations, inasmuch as the risk is much greater in some cases than in others. A fleet of milk delivery trucks, for example, which normally operate over fixed routes on improved roads and during hours of light traffic, would have a lower rate for this factory maintenance insurance than would a fleet of public haulers or intercity trucks.

In presenting this plan, it was pointed out that many of the manufacturers maintain their own service branches at scattered points throughout the country. These branches obviously carry a certain amount of irreducible overhead. Under the present

conditions, where the branches perform only occasional service or maintenance operations, the overhead charged to any particular job is quite prone to be inequitably heavy. If, however, the manufacturer could be assured, through such an insurance plan, of a certain minimum amount of work per year, servicing all the units he has sold during the previous year, he could schedule his work to a certain extent, assuring his branches of a steady volume of work, and distribute his overhead more equitably. The plan would probably work out, so that all the branches would work 24 hours a day with a TURN TO PAGE 46. PLEASE

### TIMKEN HIGH TRAC-

## VEW MODELS

IMKEN-DETROIT AXLE CO. has extended its line of axles by adding four groups of products in which a series of dead—or trailer—axles and a new type of differential are included. So far as possible, axle parts, wheels, hubs, brakes, etc., are interchangeable with present designs.

One of the new units is a smaller tandem four-wheel drive assembly for six-wheel trucks, designated SW 75, which is designed for gross load of 16,000 lb. It embodies two worm-drive axles connected together, and to the frame, by inverted semi-elliptic springs, rather than through load equalizing beams as in the larger SW units. Ends of the springs bear upon pads on the axles and are free to slide. Provision is made for two sets of radius rods beneath the springs and these are carried to a frame cross member at the spring center position if such a cross member be provided. Torque is taken through two other rods above the axles, as in the larger SW axles. (Top fig., page 37.)

The two-wheel drive, four-wheel units are intended for service on first-class roads in level country where greater load carrying ability is desired. General construction is similar to the SW 75 unit including the semi-elliptic interconnecting springs. The driving axle is a standard Timken 50000 series bevel gear drive rear axle with a series 80000 Timken dead axle at the rear. This type of unit is also available with a worm type driving axle, a single ended SW axle being used, and the 80000 trailer axle, in which case SW series load equalizing beams are employed. Double reduction gear drive is also available in the driving axle.

Timken series 80000 trailer axles are offered in several capacities for use in combination as four-wheel units, shown in bottom fig., page 37, for four-wheel semi-trailers and six-wheel trailers or separately for two-wheel semi-trailers. The four-wheel units, which are self-contained, embody two trailer axles with brakes and load-equalizing beams and are interchangeable with companion sizes of SW four-wheel units.

A new type of differential, which the company has named "High Traction," is offered as an inter-axle differential in tandem axles units for six-wheel trucks and also in place of the conventional differential in several standard axles. This new differential is designed to automatically compensate for loss of traction,



Austin equipped with a new 1/4 - ton pick-up body. Built of metal the body has a raised floor over the rear axle, wheel houses, flares and tail - gate

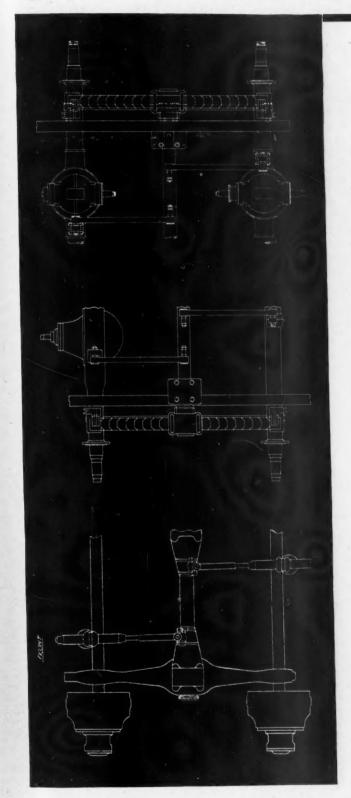


The inter-axle differential center is placed in a driveshaft extending through the drive unit and driving the worm shaft by straight spur gears

The new "High Traction" differential at bottom has less teeth and longer and wider teeth in its gears than the conventional differential at top

## ON PARADE

TIMKEN DEAD AND LIVE TANDEM AXLES



Top—The SW 75 tandem axle unit for lighter six-wheelers embodies two semi-elliptic springs with sliding ends. Center—The SBT 75 series is made up of one driving and one dead axle. Above—Tandem axle trailer units are like the SW 4-wheel drive units except for use of dead axles

on one axle in a tandem axle unit or on one wheel in a single axle, by transmitting additional power to the other axle or wheel.

Gears of the new differential are made with less teeth than a conventional differential and the individual teeth are much longer and heavier. As a result of this construction more torque is transferred to one side of the differential than the other under certain conditions.

When the SW tandem axle units are furnished with the "High Traction" differential between axles the forward axle is supplied with a wormshaft driven by spur gear from a powershaft carrying the differential, as shown in center fig., page 36. Due to the counterclockwise rotation of this shaft a left-hand thread worm and worm wheel must be used in this axle.

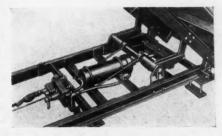
Most of the units of the Timken SWD series axles, as this series is known, are interchangeable with the standard SW line, this including axle housings, shafts, bearings, etc.

Inter-axle differentials are at present offered only on worm drive tandem axle units, although it is expected that double reduction type axles will be made available with inter-axle differentials shortly.

#### Perfection Hydraulic Hoist for Fords and Chevrolets

The Perfection Steel Body Co., Galion, Ohio, is offering a new heavy-duty hydraulic hoist for Fords and Chevrolets with a complete line of steel bodies. A feature of the hoist, which is ruggedly constructed, is a "Cushion Drop" mechanism or automatic control which drops the body, full or empty, rapidly to the riding position without slamming the frame. The hydraulic cushion action takes place when the body frame comes within several inches of the chassis frame. The hoist raises the load to 50 deg. in less than four seconds and returns it by controlled gravity to any intermediate position. An automatic safety valve mechanism holds the body in case of power failure or accidental releasing of power clutch.

Close - up of the lifting mechanism of the Perfection hydraulic hoist for Ford or Chevrolet. Note the pump, cylinder and construction of lift



### DODGE + + + WOOD + + + FAGEOL



Dodge-DeKalb Stop-Go unit

#### Dodge and DeKalb Offer House-to-House Model

Dodge Bros. has added a house-to-house delivery vehicle to its line. It is a 1½-ton 4-cylinder unit equipped with a DeKalb Step-Go body and priced at \$1,170. The vehicle is also available with a six cylinder engine.

The vehicle is controlled by a single pedal which when pressed to the floor releases the brakes and engages the clutch moving the vehicle forward in a previously arranged speed. Shift to other gear speeds is accomplished by a partial movement of this pedal. Releasing the clutch and applying the brake is one automatic action; the operator need only remove his foot from the control pedal. This automatic action is accomplished by a specially designed set of springs. While not for use under ordinary circumstances, an auxiliary brake pedal is also provided for use in emergencies.

The body made by the DeKalb Wagon Co., DeKalb, Ill., has a solid oak frame and is panelled with Met-L-Wood having steel on both sides. The roof is covered with white duck and the matched ceiling is fastened with screws. A solid rear panel with look-out windows or double doors are optional. Load space within the body is 59 in. wide, 80 in. long and 56 in. high. The driver's pit is 72 in. high. Equipment includes dome light, rear vision mirror, windshield wiper, nickel-plated hardware, tire carrier and rear bumper.

Fuller Adds 3-Speed Herringbone Auxiliary

Fuller & Sons Mfg. Co., Milwaukee, is offering a new heavy duty three speed auxiliary transmission which provides a reduction, direct drive and overdrive by means of con-

stant mesh herringbone gears and gear type clutches. This auxiliary is designed to be used with a regular unit mounted four speed transmission on trucks and tractors of 5 ton capacity and more.

The corresponding four speed gearset is the Fuller MHU which replaces the former Model HU. This transmission is designed for 5 to 7½ ton trucks with engines up to 638 cu. in. displacement, six cylinder and 575 cu. in. four cylinder. These engine limits are slightly higher when the transmission is used with the auxiliary set.

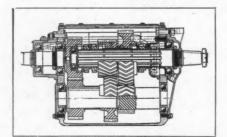
The auxiliary, named Model AY, has ratio of .77:1 in overdrive, direct drive and 1.99:1 reduction. Ratios of the MHU are 6.3, 3.2, 1.7 and direct. The combination gives a range from 12.48:1 with both sets in low to .77:1 in overdrive and working through a rear axle reduction of 8.00:1 the final reduction would be from 99.84:1 to 6.16:1.

All gears and shafts of the auxiliary are made of  $3\frac{1}{2}$  per cent nickel steel, case hardened, the case is of nickel cast iron and ball bearings are used throughout. Control has been arranged for mounting on the rear end of the main transmission if desired. A large S.A.E. takeoff opening and an internal type speedometer drive are provided.

#### Schacht Puts Out New 10-Ton Tractor Truck

A new 10-ton tractor truck, designated as Model TRH, has just been added to the line of LeBlond-Schacht Truck Co., Cincinnati. This new unit offered in three standard wheelbases, 148, 168 and 174 in., is powered with a Hercules six-cylinder

Fuller auxiliary for heavy trucks



#### A PARADE OF THE

4% x 4% in. engine, developing 103 hp. at 2200 r.p.m. This model is also available with a Waukesha six. Engine accessories include a Hall-Winslow oil filter and Monarch governor. The engine is mounted in unit with a multiple disk clutch and a 5-speed transmission. Electrical equipment is furnished by Auto-Lite and carburetion by Zenith.

Final drive is through a Timken full-floating bevel axle having a gear



Le Blond-Schacht tractor uses Hercules or Waukesha engines

ratio of 7 4/5 to 1. The braking system comprises four wheel hydraulics. actuated by a booster, for service and a four-shoe Tru-Stop disk mounted in back of the transmission for parking. The frame, 7 x 3 x 1/4 in., is pressed steel reinforced with 9-in, fish plates, ¼ in. thick. Budd disk wheels with 9.00/20 balloons, duals in rear are standard equipment and 9.75/20 tires are optional at extra cost. In addition to a 28-gal. tank under the seat an auxiliary tank of 35 gal. is mounted on side of the frame. When sleeper cab is furnished a 100-gal. tank can be mounted in cab at extra cost.

Equipment includes lights, mirror, air-cleaner, side splash plates, speedometer, temperature indicator, electric horn and extra Budd wheel.

#### Fageol Lightens New 10-Tonner With Aluminum

Fageol Motors Co., Oakland, Calif., has developed a 10-ton six wheeler in which use of aluminum alloy brought about a saving of 2900 lb. in chassis weight, of which 960 lb. was saved in unsprung weight.

Design of the truck as a whole is based upon a previous model in which most parts, which are made of aluth

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### SCHACHT + + + HUG + + + FULLER.

#### LATEST MODELS

minum alloy in the new model, were made of steel. In working out the design of parts made of aluminum alloy Fageol engineers enjoyed the cooperation of the Aluminum Co. of America. In no case where aluminum was substituted for steel was the safety factor decreased. These factors were calculated from actual tests of parts and it was found necessary to increase sections by an average of 50 per cent where aluminum alloy was



Aluminum alloys saved 2900 lb. in weight of Fageol truck

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used. All joints between aluminum members are made of heat treated bolts, although riveting can be used.

Development of the aluminum chassis started about a year ago and the job was ready for testing last fall. Preliminary testing was with a load of 22,000 lb. of steel bars and the chassis was then put in regular service and has covered approximately 35,000 miles.

Larger parts made of aluminum alloys include: axle housings, frame side rails, radius rods, rear hubs, spring brackets, rear and center cross members, hood panels, fenders, running boards and cab frame angles.

#### Wood Hydraulic Brings Out Three-Way Dump

A new three-way hoist and dump body for any type truck chassis was recently introduced by the Wood Hydraulic Hoist & Body Co., Detroit. It is offered in three models of 5, 10 and 20 tons capacity.

The hoist is of the single-unit hydraulic type, consisting of a foursection telescopic cylinder with an oil pump and reserve tank built in. This cylinder, mounted on double trunnions, applies lifting power direct to the body center through another trunnion When the body is all the way up it stops automatically because the oil is by-passed through a port in the inner cylinder wall and returned to the oil pump. This prevents the building up of excess oil pressure within the hoist. The cylinder sections are of double wall construction, which besides increasing strength serves as the return channel for oil after hoisting height is attained. A ball check valve holds the body at any angle in any position. The hoist operates while the truck is moving or standing, as required for spreading material.

Side gates of the body are made of 8-gage steel reinforced by full-length steel torque tubes and vertical braces. All are flanged at the top to withstand hard blows. As the body elevates, the side gate at the lower side opens automatically by gravity, the fall being cushioned by an air plunger. Gates automatically close when the body returns to its normal riding position.

Tailgates are either single or double acting, as desired. The automatic double-acting tailgate opens and closes with the action of the body. A lowering tailgate, leaving no tailgate posts in upright position, leaving a flat unobstructed body floor the full-length of the body and gate may be furnished. Side gates, lowering flush with the body and with concealed side posts, can be furnished with the tailgate, giving a platform type of body.

#### Hug Builds 15-Ton Unit For Severe Quarry Work

A new heavy duty 15-ton, sixwheel truck, designated as the Model 99 Hug Roadbuilder and de-

Wood three-way hydraulic hoist





Hug 15-ton job on cushion tires

signed especially to meet the severe conditions of operation in a quarry is announced by the Hug Co., Highland, Ill. This new model embodies the set-back front axle design, the Hug front spring rocker construction, a new method of front end spring suspension designed to prevent stresses and twists from being transmitted to frame and cab when traveling over uneven ground, and the Hug Multi-Cushion Triple Compensating rear springs. The spring rocker construction was described in the March issue of Commercial Car Journal.

The new model is powered by a Buda heavy duty six-cylinder, 434 x 6-in. engine, developing 126 hp. at 1850 r.p.m. It is equipped with a Brown-Lipe four-speed transmission and 3 speed auxiliary, making possible 12 speeds forward and three reverse and giving a total reduction in low gear of 139:1. An overdrive ratio of .747:1 with rear axle ratio of 10.26 to 1 provides an operating speed of approximately 30 m.p.h. Final drive is through a Wisconsin Model SD-410 double reduction tandem axle. Westinghouse air brakes on all six wheels are used for service braking while a 16-in. two-shoe Tru-Stop is supplied for emergency purposes.

The frame, which is made of 9 in. steel I-beams having reinforced tubular and channel cross members, is fitted with a channel front bumper and front tow hooks. Tire equipment consists of Overman heavy duty cushion tires, size 40 x 16 front and 36 x 8 rear.

The body of Model 99 is a 10-yd. specially designed quarry type body furnished by the Easton Car & Construction Co., Easton, Pa. Body bed is built of % in. plate steel and has a reinforced false bottom of 3-in. oak sills and ½ in. plate to absorb shocks caused by dumping heavy rocks. For specification details see table starting on page 61.

### NEWS





### Our Own Ear to the Ground Department

- Ford's competitors, we understand, are of the opinion that the new model will be a six-cylinder job. It was the one thing needed to confuse the Ford situation completely. For all prognosticators to remain free of the stigma of prevarication Ford must hold on to his four-cylinder model and bring out a new six, a new eight and a Dieselengined truck. Which would give him the right to change his title to "leading exponent of mess production."
- It would seem that he is safest who contents himself with the observation that Ford will announce a new model. What may be considered further confirmation of this is the fact that Ford advertising copy is now being issued one piece at a time. Early in the year Ford advertising began with six pieces of copy.
- Since the partial list of new state truck weight and size restrictions was published in the July issue, requests for additional information have been piling in. We wish to inform all and sundry that (with the help of Mr. Armstrong, secretary of the Motor Vehicle Conference Committee, and our Mr. Crofoot) we will publish a complete list of restrictions in the September issue in the form of an insert. You will be able to tear it out and paste it on the wall or in your hat—if that's where you keep such things and it's large enough.
- Texas' new regulatory laws are so nasty to haul-for-hire operators that LaRue Brown, N.A.C.C. legal brains, was dispatched to the Lone Star (not that of Charity) state to look around, about and into. Object is to test the law.
- A prominent manufacturer is scratching his head over the details of an integral wheel and brake drum for motor trucks. In years past, more than one engineer has wondered why tires shouldn't be mounted on brake drums. The wonder may cease if there are no patent complications.
- Gumshoeing around, we learned what we wanted to know about Everready Rustone, the new product of National Carbon Co. It is an organic

compound with an oil base which is entirely emulsified by a hush-hush method. It has the same anti-corrosive properties as the new Everready Prestone, so NCC now offers year-round anti-rust treatment.

- You may not care a hoot, but 67 per cent of the spark plugs used by farmers are replaced every year.
- Another Cinderella story. Paraffin wax, once considered a nawsty by-product of petroleum distillation, has been converted into a superior grade of lubricating oil.
- Now that the radial engine has proved so satisfactory in airplane performance, you may expect to hear talk of putting radial engines on the front, rear or under trucks. Additional, potent argument will be that it will help defeat present restrictions on overall length.
- Truckers soon may be hauling products packed in a new container. It's a can with tin top and bottom and cellophane sides. Good for dry eatments, but still unsuited for wet.

#### Automotive Flashes

#### Another Tiny Truck

Toby is the name of a new baby truck to be offered by a recently organized Delaware corporation, the Lee Tobin Corp. This new baby to be sold at \$450 and to carry 800 lb. will be powered with a Continental 4-cylinder 30-hp.,  $2\frac{34}{4} \times 3\frac{5}{32}$ -in. engine. It will have a total height of 62 in.; an overall length of 90 in.; a wheelbase of 60 in. and a track of 48 in. The truck will be assembled for the Tobin Corp. by the Selden-Hahn Truck Corp., Hamburg, Pa.

#### A Reciprocity Argument

Arguing that double registrations cause a loss to citizens which is more than twice as much as the additional revenues obtained by the states requiring them, Edw. S. Loomis, Secretary of the Truck Committee of the N.A.C.C., in several recent talks urged greater extension of reciprocal license agreement for vehicles operating in other states than those in which they originate.

#### A National Asset

In an article appearing in the July issue of the National Sphere, A. J. Brosseau showed that motor transport is a national asset. In his exposition he indicated need for thorough study of rail motor coordination by railroad managements and refuted charges that truck and bus competition is unfair, stating that nothing prevents railroads from entering the trucking business if they so desire.

#### Doubts Value of Rate Increase

Strong doubt was expressed at the Traffic Managers' meeting of the N.A. C.C. that the railroads' application for 15 per cent increase in freight rates would accomplish the desired result. It was felt that such an increase would react in favor of rail competitors. The meeting reviewed the possibilities of further rail operating economies as well as motor-rail coordination.

#### Keep Cool Right

The complete story of proper cooling system maintenance is carried in the 1931 edition of the Annual Cooling System Servicing Manual printed by the National Carbon Co., Inc., New York. Based on data accumulated over a long period of laboratory research work, the manual is designed to answer every question on the subject.

#### Railroad Goes Store-Door

After nearly two months' time the Chicago, Milwaukee, St. Paul and Pacific Railroad has decided to establish store-door delivery and pick-up service as a permanent shipping feature. This new shipping service, according to E. B. Finegan, traffic manager, has enabled the road to regain considerable traffic lost to motor competition.

#### A Five Buck Come-On

To induce new and used vehicle buyers to come back regularly for service some Chevrolet dealers now are offering \$5 and \$10 service agreements covering five lubrications and inspections, paid in advance. The \$10 contract includes motor oil changes.

#### G.M.T. Switches Agency

The advertising account of General Motors Truck Co., Pontiac, has been placed with Campbell-Ewald Co.

TURN TO PAGE 42, PLEASE



Caught in Quotes

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#### New Year Shooters Every Night

EDWARD F. BROWN, DIRECTOR OF THE NOISE ABATEMENT COMMISSION—"Of trucks examined in New York 86% had loose fenders and 71% rattling hoods; 75% of the chain drive trucks had badly adjusted chains; 57% of all trucks had loose sides; 43% had loose tail boards, running boards or squeaky brakes; 29% had loose license plates or other equip-

### NEWS



ment, and 14% noisy rear doors, loads, transmissions, loose radiators, spare tires or side boards. New York is increasingly becoming a city of night trucking as there is so much traffic congestion during the day. If our patients are to get well in hospitals and if our citizens are to get enough sleep and quiet to keep healthy, truck owners must cooperate with the city by keeping their trucks in good condi-tion. And if they don't cooperate vol-untarily, they will be forced to."

America's Unsung Comfort Bringer

M. L. PULCHER, PRESIDENT, FEDERAL MOTOR TRUCK Co.—"Motor haulage is today essential to the industrial, social and educational life of the nasocial and educational life of the na-tion. It is a definite factor in Amer-ica's life. As in other forms of industry, the truck reduces overhead on farm and increases the margin of profit. City and country have been profit. City and country have been brought together, thus benefiting both farmers and city dwellers. To a great extent each class is offered the advantages enjoyed by the other."

#### Price Standards Bolster Wage Scales

Price Standards Bolster Wage Scales

CALVIN COOLIDGE—"The wholesale cost of most commodities is principally the cost of labor. The wage scale of the country has held rather better than anything else, but if all other costs are reduced the pressure to reduce wages will be well nigh overwhelming. Profitable price standards are not a panacea, but they are an essential to wage scales and economic recovery."

#### Business Must Regain Public Confidence

George H. Moriarty, General Manager Durant Co.—"If business men would quit impressing upon their employees and customers that times are bad, and get busy to build up their own business, then the trade of this country would far more quickly return to normally. Business must rereturn to normalcy. Business must regain the confidence of the public and it is up to the individual business man to see that this happens.



#### Prosperity Notes

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\$ Demand for American gasoline, domestic and foreign, in the last half of 1931 will be about 3.7 per cent greater than it was in the same period of last year, according to the American Petroleum Institute.

\$ For the first time this year, sales of General Motors exceeded those of the corresponding month last year. Sales in June were 103,303 as compared with 97,318 in June of last year.

\$ The tire business of the United States Rubber Co. for the first five months of this year showed a large increase over the business of the same period of a year ago.

\$ During first six months of this year Chevrolet fleet sales increased 9.4 per cent over the same period last year; 71 per cent over same period 1929 and within 2000 units of equaling figure for full year of 1929.

\$ Johns-Manville Corp. and subsidiaries report net profit for the second quarter of the current year of \$715,-657 after all charges.

\$ Automotive stocks as of July 1 showed a strong recovery on the whole over the earlier 1931 trend of dropping prices. The July 1 average recovered nearly 3 points to 23.45.

\$ Sales of Diamond T trucks in June showed an increase of 25 per cent over June, 1930. E. J. Bush, the vice-pres-ident, expects the second half to register a 50 per cent gain over the first.

\$ Net profit of Perfect Circle Co. for six months ended June 30, 1931, is \$494,662. This compares with \$368,-057 for the corresponding period last

\$ Pierce-Arrow Motor Car Co. and subsidiaries report net profit for the first half of the current year of \$421,-711 after all charges.

\$ Net earnings of the Edw. G. Budd Mfg. Co. for the first half of the cur-rent year were \$130,565. This com-pares with the earnings for the whole of 1930 of \$20,691.

\$ Budd Wheel Co. reports net earnings for the second quarter of \$271,-122 as compared with \$214,079 for the first quarter.

\$ Borg & Beck Co. report an increase of 40 per cent in sales for the first half of the current year as against the last half of 1930.

\$ Dividends paid by automotive manufacturers in June amounted to \$2,500,570 according to the Standard Statistics Co. of New York.

\$ Thermoid Co. reports sales for the second quarter of 1931 as 65 per cent greater than the first quarter of the present year.

\$ Perfect Circle sales in June, 43 per cent greater than June a year ago, were the largest in the company's history.



#### The Overload

collection of items—interesting en when not news—and garaged ere because there's no other place or such morsels.

#### The Perfect Reader Isn't

The title of "Reader-in-chief-of-every-word" is still open. Last month we challenged Philip Podren, Matta-pan, Mass., to prove his claim that he reads every word of every issue of Commercial Car Journal by answer-

ing our doubts expressed in small type. We have no answer. Is it possible that our faithful reader is away on vacation, or sick or—? Perish the doubt.

#### The Goblins'll Get You

Eskimos and Indians ran for cover when the first truck rambled along the shores of Hudson Bay, Canada, recently. It is being used to freight supplies from the Roman Catholic Mission in Churchill, Canada's most northerly seaport, to missions along the shores of the Bay.

#### Unsung Drivers

Unsung Drivers
Imagine starting and stopping on grades ranging from seven to 26 per cent and shifting gears while climbing and descending. Think also about stopping on a 20 per cent grade with hand OR foot brake. These and many other tests were set up for trucks for the U. S. Forestry Service in Oregon. GMT trucks to the number of 49 were ordered. The names of the drivers who put the trucks through the ordeal were not disclosed. They rate medals.

#### Degrees

A survey made in Gotham reveals that college-trained engineers, chemists and other technicians start their careers at lower wages than do truck drivers, Jokesmiths (vodvil, talkie and comic strip), please

#### Eight Hundred Turns

The "High Traction" differential, pictured and talked about on page 36, was used in the cars coming in first and second in the 500-mile classic at Indianapolis on May 30. Averaging almost 100 m.p.h. two hundred times around a course with four right-angle turns is no vacation for any piece of machinery.

#### Exposures!

Exposures!

A. Burdet Crofoot, who did an editorial Paul Revere last month (Laws of 1931 Measure Trucks for a Tighter Fit), points out that Chinamen are accustomed to reading backwards but not standing on their heads. The "chicken tracks" labeled "Funny, But Not So Clean," last month were upside down.

But we know the translation. It is the form by which a finance company in Shanghai, China, reminds a dollar-downdollar-a-week purchaser that a monthly payment is due.

TURN TO PAGE 42, PLEASE

#### Automotive Flashes

CONTINUED FROM PAGE 40

#### A Way to Easy Cash

Lempco Products, Inc., Bedford, Ohio, is seeking a trade name for its new patented axle shaft and is willing to pay \$500 in prize money for suggestions. Starting with \$100 for first prize, 70 additional prizes are provided for runners up.

#### Wheeler-Schebler Moves

Manufacturing operations of the Wheeler-Schebler Carburetor Co., subsidiary of the Marvel Carburetor Co., are being moved to Flint.

#### Giving Brakes the Air

Danger of overheated brakes and tires on trucks is claimed to be reduced to a minimum by a new "air blast" brake drum recently introduced by the Gunite Corp., Rockford, Ill. Radial ribs or fins cast in the inside back face of the brake drum are covered with a thin plate, forming a centrifugal fan that draws air in through small holes at its smallest diameter and blows it between the drum and lining over the shoes and upon the tires.

#### Display and Instruction

Chevrolet, besides establishing a permanent truck display comprising 33 types of commercial transportation units at 5800 Woodward Ave., Detroit, has also organized a school in these quarters which will be conducted every day of the week for the instruction of dealer salesmen in the problems of modern commercial transportation.

#### Transportation Meeting Date

The National Transportation Meeting of the S.A.E. will be held at the Shoreham Hotel, Washington, October 27 to 29, inclusive. This change from the original date was made to avoid conflicting with the meeting of the American Petroleum Institute to be held in Chicago November 10 to 12.

#### Wet Brakes Now Out

A rubber brake shield, designed to make internal brakes water and dirtproof, has been introduced by the General Tire & Rubber Co. By serving as a barrier to water it is said to prevent frozen brakes, slipping or dragging brakes, scored drums and provide more uniform braking.

#### European Recognition

European railroad companies, unlike American, show a growing appreciation of the advantages of motor transportation. According to John V. Lawrence of the N.A.C.C., they show a marked tendency to supplement their facilities with bus and truck

#### Hyphenates Drum Name

As the result of an agreement be-As the result of an agreement between the Berkley Mfg. Co., New York City, and the Bossert Corp. of Utica, N. Y., brake drums sold by the Berkley Co. will now be known as the Berkley-Bossert product.



#### Personnel Changes

David E. Ross, Purdue University benefactor, has been elected president of the Ross Gear & Tool Co. to succeed Edw. A. Ross, who died suddenly in London. The new president is the inventor of the Ross gear.

Milton Holmes, well-known automotive executive, has been appointed general truck sales manager of the Reo Motor Car Co. Since 1915, Mr. Holmes has been associated with the following companies in executive capacities: Republic, Transport, Commerce, Federal

Norman F. Kimball, formerly advertising manager, has been promoted to assistant to F. R. Van Rensselaer, vice-president in charge of sales of the American-LaFrance & Foamite Corp. T. O. Young succeeds him as advertising manager.

♠J. M. Hannon is now advertising manager of the Eisemann Magneto Corp.

Harry F. Levett, for three years associated with the export department of the Federal Motor Truck Co., is returning to South Africa to rejoin Messrs. Levett, Ltd., of Cape Town.

QL. D. Mead, automotive engineer since the early period of the automobile, has been appointed chief engineer of the Divco-Detroit Corp., makers of house-to-house delivery vehicles.

♦ Morris Scheinfeld, well known as secretary of the Philadelphia Boost-ers' Club, has been appointed sales manager of the Radvill Oil Co., Inc.

Henry Kennady, old-timer of 1908 vintage, has been appointed Omaha district manager for Graham cars and Paige commercial cars.

OW. T. Palmer, capable, has been promoted to the position of manager of the Replacements and Equipment Divisions of the Russell Mfg. Co., makers of Rusco products.

♠L. D. Tuttle, formerly with Van Norman, now represents the Stanley Electric Tool Co., operating out of Atlanta, Ga.

◆A. E. Young and George S. Sarver, representatives, and R. H. Casler, field engineer, have been named associates of R. L. Morrison, district sales manager of Bendix-Westinghouse Automatics Air Brake Co. motive Air Brake Co.

Harry S. Harper, conspicuous automotive figure, has been slated to head the sales organization of the Willys-Overland Co. again as successor of George M. Graham, resigned. Mr. Harper originally joined the Willys company in 1911, leaving in 1920 to join Studebaker.

O. J. Paul, advanced, steps from the office of Kansas City region man-ager to manager of the Chicago region. He is succeeded in Kansas City by C. E. Warner, formerly New York City sales representative.

J. A. Kiggen, Jr., man of the hour, heads White's newly created coach division as sales manager with head-quarters in Cleveland. Mr. Kiggen for the last two years has been New York States manager. York State manager.

#### The Overload

CONTINUED FROM PAGE 41

#### Exposures !

Our prediction last month of automatic starting provoked a quarter of a peck of ha ha's among some of the old-timers. It seems that the Chalmers, Franklin, Scripps-Booth and Regal pre-war cars had starters which were controlled by ignition switches. Yes, they were non-stalling, too.

#### Keep Off

Ohio public utility commissioners started something new recently when they denied two applications for operation of common carrier trucks over a congested main route, U. S. High-way 20. Simply because the route is congested.

#### With Thanks

Right heartily do we express our appreciation of the kindness of Mr. W. Lambdin, art director, Franklin Printing Co., Philadelphia, for lending us his per-sonal copy of the Horter etching of the Autocar plant which graces page thirteen of this issue.

#### More Repercussions

More Repercussions

Add to the names of two former newspapermen who consider the new news section of C.C.J. the nerts that of one Steve Bryce, publicity manager, National Automobile Chamber of Commerce. He, who certainly is entitled to speak of such matters, threatens to become "more effusive in his praise" if ye editor visits New York.

The truck rating discussion in pages of C.C.J. brings about repercussions pleasing to editorial ears. We mention two. E. G. Bern, Mack branch manager in Chicago, saith that we "are on the right track to do the truck industry a world of good." We take a curtain bow. The White Co. is spending much gold coin on ads which capitalize on the interest aroused in truck ratings. Another curtain bow.

#### Technological Unemployment

A. F. Denham, creator of MacAndrews, the informa-tion craver (his, Denham's, official title appears on page three), is suffering from what the M.D.s call streptococcie infection. [This spelling while obtained from sources believed to be reliable is not guaranteed.] He expects to be back in the office shortly.

#### Sell Truck Equipment

Dell Iruck Equipment
Chautauqua County, N. Y., must be a heaven for dealers in non-skid chains, windshield cleaners, cab heaters and snow plows. The county superintendent of highways, S. E. Fitch, told the Roadbuilders that the average annual snowfall in his county is 91 in. There is more. This figure is for the area outside the snow belt. Three to four times as much falls in the snow belt. A fine vacation item?

#### Taxes, Taxes, Taxes

Taxes levied on motor vehicles in the United States in 1930 amounted to almost one-fifth of the value of all the motor vehicles, according to figures compiled by the A.A.A. Registration fees, personal property and gasoline taxes amounted to \$1,000,388,270. h

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## HOW TO CUT HIGH

CONTINUED FROM PAGE 21

quire. In small organizations the superintendent may be called upon to assume the duties of Safety Director. Briefly, the duties of the director are:

To check up on unsafe practices
To secure cooperation of superintendents, foremen and drivers
To recommend mechanical improve-

ments and follow them up To supervise safety bulletin boards To arrange safety mass meetings

To investigate serious accidents and near accidents, alone or with committee

To keep records and prepare reports on accident experience

#### Safety Committee

Organizations employing 25 men or more can profitably create safety committees, consisting of a company executive serving as chairman, a mechanic, inspector or the Director of Safety, if there is one, as secretary, and two or three drivers. Such a committee if properly made up and kept on its toes by giving it real work to do, will not only relieve the management of considerable detail work, but will form an invaluable medium of communication and cooperation between the management and its drivers. To keep such a committee alive and interested, meetings should be held at least once a week to take up such matters as: the accident record; special hazards and their correction; suggestions for mechanical or other improvements; safe practices and company rules; discipline of unsafe drivers and planning and direction of special contests or campaigns.

#### Selection and Instruction

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New employees should be carefully selected with respect to physical fitness, knowledge of work or capacity to learn, character and responsibility. A fair idea as to these characteristics can be determined by questioning along the following lines: Has the applicant physical strength and endurance to operate a truck without serious fatigue? Is he subject to epileptic fits or fainting spells? Is he addicted to the use of liquor or drugs? Has he ordinary intelligence and judgment? Has he an adequate "bump of caution" or foresight? Is his "reaction time" sufficiently low to respond quickly in an emergency? Is his eyesight and hearing good enough not only to get signals and judge distances, but to be immediately aware of everything that is going on around him? An estimate as to general reliability can be obtained by probing the applicant's personal history. Character references may be required. Physical examinations and road tests also are of great value. Psychological testing of applicants to determine mental reaction and speed of thought help reduce the personal hazard.

#### Instruction

Every new driver should be put through a training course. An excellent plan of training in large or small organizations is to place the new man for a definite period under the tutelage of an experienced driver who also has the ability to impart his knowledge. If at the end of this period he has not proved his ability to handle a truck safely he should either be laid off or placed in some other department. Special schools on driving is another method of instruction and one which also arouses personal interest. A school consists of a series of meetings, usually six, held in the evenings, and is operated on the lecture principle. Speakers should discuss both mechanical and personal elements of safe driving. Drivers' clubs, managed entirely by the drivers, have brought excellent results in instruction and interest. These can be organized for several excellent purposes—to keep up a continuous course of instruction on safe driving; to familiarize each member with local and state traffic laws and encourage compliance; to furnish the men an opportunity to express their ideas regarding present and future traffic laws; to keep individual responsibility constantly before the men and to promote good fellowship.

#### Meetings of Employees

To keep alive the safety movement, stimulate safety enthusiasm, promote good fellowship, acquaint the driving personnel with progress and of outstanding achievements and finally to procure a fitting background for presenting awards and rendering citations, regular and special meetings of employees have been found to be very effective. They can be held frequently at regular or irregular intervals or on a special once to twice-ayear basis. Annual or semi-annual meetings should be arranged on an elaborate scale. Cards may be printed as invitations and admission tickets, ribbon badges ordered for distribution, wide publicity given by word of mouth, bulletin boards, house organ, etc. Invitations should always include employees' wives. The speaker of the evening should have a good conception of the safety movement and be preferably of the homely, practical type who can touch on the emo-Awards to individuals for special efficiency, heroism, etc., can

most effectively be made at the close of such an address. Programs are best closed with safety motion pictures, which can be secured from the National Safety Council, 108 E. Ohio Street, Chicago, Ill.

#### Rules for Safe Driving

Rule books intelligently prepared can be of real constructive value. Such books should be of vest-pocket size and should contain only rules that the company intends to enforce. The men should be urged to study and observe them at all times. Usually books of this character start with a general declaration of company policy which is followed by rules of the road, care of the vehicle, suggestions on proper loading, reporting accidents and vehicle defects, road courtesies and garage precautions. They may also contain requirements of new laws, together with comments and special personal short stories such as "You and Your Car."

#### Accident Records

Accurate and complete accident records aside from the demands of insurance companies are of great value to show prevailing types and causes of accidents and to show which drivers have the most accidents, so that proper action, educational or disciplinary, can be taken and to arouse a competitive spirit on the part of everyone concerned to better his own record, the group record, and the company record. (How comparative accident records are compiled and used will be the subject of another article on Safety in the September issue.)

#### Investigation of Accidents

In many cases, especially for serious accidents, an investigating committee or Board of Inquiry, composed of executives or drivers or both, may be used with good results. Inclusion of drivers is of great educational value not only to the men themselves but to the other drivers with whom they will discuss the case. Furthermore, drivers in general are less likely to feel that any proposed disciplinary measure is arbitrary if some of their own number have taken part in the investigation. Investigations should be made as soon after the accident as possible to eliminate the possibility of the loss of important evidence. Results of inquiries should be made known as soon as possible to secure the greatest moral effect. It should be remembered that the principal reason for an investigation is not to place entire blame upon one cause or one person, but rather to point out all the contributing causes—to show how the accident might have been prevented, TURN TO PAGE 50, PLEASE

# MAINTENANCE CHATTER

For the Boys in the Back Room and the Men Who Work in Glass Cages



SHUT THE HOOD

K AISING the hood on very hot days may make the engine hotter, not cooler. Of course, the idea of running a truck with the hood open is to allow the air from the fan to escape with ease from the engine compartment. But, as A. D. Gardner, chief engineer, Automotive Fan & Bearing Co., told the S.A.E. summer meeting, air may be drawn forward to pass through the fan blades and thereby reduce the amount of air drawn through the radiator. If the fan is 3 in. from the radiator core "air leaving the fan may form eddies past the tips of the blades and enter the fan again and air may be drawn through the forward louvers in the same way."

Air cuts a few other capers about the cooling fan. It moves forward, toward the radiator, at the center of the fan and at the outer edges of the blades and moves inward toward the fan center at the blade tips. But there must be an outlet for the air from the engine compartment, no matter what twists and turns it takes on the way.

#### CHEVROLET

NEW bolt, which is 1/16 in, longer, is now being used to attach the universal joint yoke to the front propeller shaft on the 157-in. wheelbase Chevrolet truck. With this longer bolt, a new shakeproof lock washer is used to prevent loosening of the universal joint at this point. The new bolt and shakeproof lock washer should be installed whenever the front propeller shaft is disassembled, the lock washer being placed underneath the plain washer.

A new type clutch throwout bearing and collar is now in production on Chevrolet passenger cars and trucks. The collar has an oil reservoir back of the bearing instead of on the top.

#### WIPE PLUGS CLEAN

SPARK PLUG porcelains should be wiped with a clean, dry rag at frequent intervals and after vehicle washings, according to O. C. Roade, chief engineer, Champion Spark Plug Co. He suggests that a large percentage of hard starting troubles can be cured by this simple remedy.

#### DIAMOND T

REMANUFACTURED engines are offered on an exchange basis by the Diamond T factory and its branches. The work is performed in the factory and is so thorough that engines carry the same guarantee as new engines. New parts for remanufactured engines can be purchased from open stock because exchange engines are machined to standardized dimensions.

A second exchange can be

made when the first remanufactured engine requires a major overhaul, in fact the factory guarantees continuity of this exchange service.

Remanufacturing comprises a complete disassembly, grinding of cylinders, fitting of new pistons, pins and rings, bearings, bushings, gears, pump parts, guides, etc. After rebuilding, the engine is run in on a dynamometer and then tested for power. A dynamometer test card is attached to each engine.

**FORD** 

Rear Springs

HEAVY duty truck rear spring with 16 leaves is available for use with the Model 205-A coal body.

A new rear spring, 48 in. long, which is intended for use under the school bus can also be used on trucks equipped with 16 leaf springs for more spring resiliency. However, when a 16 leaf spring is replaced with a 48-in. spring, the truck must not be overloaded.

When the 48-in. spring is installed on a truck, it is necessary to move the shackle bracket forward 12% in. and to install a new bolt and nut.

A new radius rod bolt and nut, carrying parts numbers respectively A-102,390 and AA-4773, have been adopted to prevent spring seats on the 48-in. long rear springs moving too far forward. The nut and bolt are to be assembled in the upper bolt hole in the radius rod with the nut toward the spring to act as a stop to the spring seat.

#### Rear Axle

The truck axle housing has been changed by increasing the length of the pinion neck on the right housing from 1% in. to 1 13/16 in. On the new style housing the .060 in. shim formerly used is omitted and pinion adjustments are made entirely with .005 in. shims.



# in snappy new clothes

Economy takes on new significance in Lockheed Hydraulic Brakes; a phase of economy often overlooked: that all-important difference between purchase price and final assembled cost.

Just put Hydraulics on . . . that's all there is to the job; no complicated adjustment, lowest possible expense in time and labor; in other words, cost of assembly brought down to an irreducible minimum.

Focus attention on that cost of assembly; keeping always in mind that Lockheeds lead unerringly to lessened sales effort and cost on the dealer's floor, because of motordom's ten-year indorsement of Hydraulics.

HYDRAULIC BRAKE COMPANY
DETROIT, MICHIGAN, U. S. A.

# LOCKHEED HYDRAULIC Four BRAKES Wheel

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Journal

#### RATING FORMULA IS S. N. E. TARGET

CONTINUED FROM PAGE 18

ability standpoint, but would only run 10 m.p.h. instead of 20. By putting the speed into the formula as a constant this would put all the trucks on the same basis."

In a prelude to his proposal that tire size be the limiting factor of the weight to be carried, and that a vehicle have three or four different ability ratings taking in speed, Mr. Herreshoff indicated present methods.

"I think in the past," he declared, "whoever has set the ratings has made pretty much of a mess of it. In order to overcome the difficulty one thing we have to do is take determination of the rating out of the hands of the manufacturer. In other words, make an arbitrary or a figured rating."

The matter of speed was given consideration by Mr. Peirce, of Diamond T. Speaking of the Buckendale formula, he said: "Since the speed of the truck does not enter into it, this factor must be assumed. In an effort to simplify the formula, I wonder if it would not be practical to base the speed of the truck on its gross weight. Will not all of the states eventually pass laws, as many already have, fixing the speed according to gross weight? If this can be accomplished, the operation and application of the formula will be simple."

Mr. Winchester's statement could not have been more representative of the opinions of fleet operators present if he had been chosen by them as their spokesman.

"We have here before us really two propositions," he said. "We have the proposition of rating the vehicles, and that of Mr. Schon that the entire matter be dropped. I, for one, am inclined to believe that it would be a great mistake to drop it. Mr. Schon says: 'Let's leave it in the hands of the factory engineer.' Why leave it in the hands of the factory engineer? Really, he doesn't control it. It seems to me that the man who has controlled the ratings of trucks in the past has been the salesman of the organization rather than the engineer.

"I have listened here tonight to eminent engineers talk on this subject. There seems to be no general agreement among any of them. I agree, though, as I see it, that there are many other factors than those which have been brought out here tonight that have to do with truck ratings, that is, by the two principal speakers, Mr. Pulcher and Mr. Buckendale. I do feel, however, that this problem can be tackled and carried out successfully

by the joint committee proposed.

"The type of argument heard here tonight is exactly the confusing type of argument that I hear week in and week out from truck salesmen. If you can buy trucks on those arguments, it is really beyond me."

Mr. Hughes contributed an interesting observation on the need for a rating formula. "It would be," he indicated, "not only a matter of operator purchasing, but it would be a matter of fairness to the manufacturers and assure that each would get a fair consideration when they submit their propositions to operators."

Mr. James, research engineer, The Studebaker Corp., added that the designing engineers as well would have much to gain from a standard rating formula. "It would go a long way," he said, "to simplify his problem." Nowadays "if someone is asked to design a three-ton truck he doesn't know any more about how to start than the fellow who is going to buy it eventually. Even if the ratings worked out were arbitrary, it would at least furnish a common basis to start a balanced design as well as to finish the final purchase."

Even if a rating formula were devised, there was doubt in the mind of Mr. Horner, of General Motors, that users would stick to it. The problem will not be solved by engineers or manufacturers, he declared; it has to be solved by the users of motor trucks.

"I don't care what formula you set forth," he contended, "or what your salesmen tell them, the average user today figures that if you tell him he has a two-ton truck he is going to put four tons on it.... That is not a universal practice perhaps, but it is far too general for us to ever go off with the idea that by laying down a certain formula or yardstick of measurement the user is going to stick to it."

Likelihood that the truck industry might be accorded some taxation relief if it developed a standard rating formula was expressed by Mr. Pulcher toward the close of the meeting. A rating that was an actual engineering rating would, in his opinion, eliminate a lot of legislative abuses.

"I am of the opinion," he stated emphatically, "that some sort of a basic rating might help us on taxation matters very much."

### WILL TRUCKS SOON BE SOLD WITH SERVICE INSURANCE?

CONTINUED FROM PAGE 35

definite staff working in three shifts.
Incidentally, the thought of a company guarantee against all contingencies for a year would make a good

sales argument for factory sales representatives, at least until all manufacturers were making the same offer.

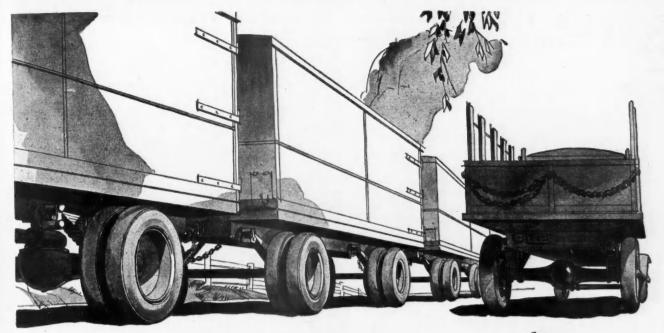
From the purchaser's point of view the advantages are obvious. If a fleet owner could be assured that for a certain fixed charge not only his regular major overhauls, but all minor repair work and damage caused by accidents would be cared for by a corps of factory-trained mechanics, the idea would be certain to have at least some appeal. Unless the factory branch were too far removed from the owner's base of operations to make immediate service feasible, this argument would be a strong one.

Many truck operators, including even some comparatively large fleet operators, have at present no real idea of what their maintenance is costing them. Where fleets are operated as adjuncts to other lines of business the cost for maintenance of these fleets goes in as part of the general cost of operation of the business as a whole. Under this new plan operators would know that their maintenance was costing them a certain amount per year. They could then figure definitely on the cost of operation of the fleet and would know whether their operation as a whole is costing more than the revenues brought in by the fleet.

Where they are used as adjuncts to other lines of business, the fleet could thus be made to stand on its own feet and the owner would know definitely what their deliveries or hauling charges are costing them. Operated by the manufacturer, who is always seeking to sell new units and endeavoring, therefore, to maintain the good-will of his customers, the owner could rest assured that this type of service would be charged for at an equitable rate.

Worked along these lines, the plan would obviously call for a distribution of costs just as is carried on in any insurance plan. That is, some vehicles would pay in insurance premiums to the manufacturer more than they would cost in maintenance for the year. On the other hand, some vehicles which might be involved in accidents or might suffer a major breakdown from some other cause, would receive maintenance costing considerably more than was paid in insurance.

For the smaller manufacturer, who does not have service branches as widely distributed, this plan would obviously not be so easy to put into operation. However, where such a manufacturer has a large fleet in any given city, he could probably afford to carry the same type of policy and designate some particular repair shop, service station or his own dealer in that city to perform the service.



Making the Wheels go Round

Hauling merchandise by motor trucks is an immense industry—but it's going to be a lot bigger. Increasingly gasoline power is a vital factor in freight transportation. Small units or heavy duty—what's the difference?

Timken Axles for thirty years have made truck wheels go 'round; hauling merchandise — dependably, cheaply.

As motor freighting grows, more and more will be known about costs—to fractions of pennies; necessary.

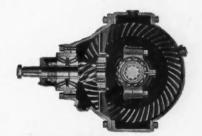
The better costs are known, the better the picture for Timken Axles.

Strength, efficiency, accessibility, long life take their toll of high costs.

They are built into Timken Axles.

THE TIMKEN-DETROIT AXLE COMPANY, DETROIT, MICHIGAN







TIMKEN AXLES



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# JUGGLING OF FIGURES DOESN'T IMPROVE 1931

CONTINUED FROM PAGE 15

your heart's content.) This position in relation to each other should, however, afford Ford a great deal of satisfaction in view of the fact that in passenger car sales Chevrolet so far this year has outsold Ford by about 5.8 per cent, whereas in trucks Ford has outsold Chevrolet by 34 per cent. It is his truck business that enables Ford to outstrip his arch rival in total passenger car and truck sales.

Finding nothing here over which to set up a merry yodel, another scent was taken up. Down the list of manufacturers' sales records for the first six months of this year and last year it took your hound. The trail ended in the Studebaker column with the discovery that here was the sole company which, far from having suffered along with others in the industry, had actually bitten off a gain of 227 per cent. Sales in the first half of last year were 626, and in the first half of this year-with Georgia figures missing for the first quarter-they were 2047. Of course, some Studebaker competitors may argue that the comparison doesn't mean much because last year Studebaker wasn't very active in the truck business. But such an argument cannot detract from the praiseworthy accomplishment, because a gain is a gain. no matter when it occurs.

Increased business was also produced by Pierce-Arrow, which with Studebaker makes up the S.P.A. Truck Corp. Sales were 65 as against 16, with no tabulation for Georgia in the first three months of this year. (Georgia, to digress a moment in explanation, changed its registration set-up at the beginning of 1931 and

the switch evidently was too much for the motor vehicle department to handle. Reports did not begin to come in until April figures were released).

All this, that is, the record of the truck industry so far this year, is a tearful story, and we have tried to tell it cheerfully because, after all, there's no use crying over milk that couldn't be delivered. There was nothing any man in the industry could do about it. The truck industry is not a basic industry; for prosperity it is dependent upon the prosperity of other lines of business. It sagged when other businesses sagged, and it will recover when other businesses recover.

Eyes now are trained on the second half of the year. What will be the effects of the debt moratorium? Will it create confidence and substitute a psychology of hope for the psychology of fear that has prevailed for many months? What does the future hold for the truck industry? The writer could dilate on this question for quite a few paragraphs, but it happens that in this very issue a prominent truck executive discourses on this topic in a more interesting and authoritative fashion than ever-faithfully-yours could muster. So he sincerely recommends that a fitting conclusion to this account of what happened in the six months' battle of 1931 would be a careful perusal of the statement by R. P. Page, Jr., president of the Autocar Co. Leaf back to Page 13 and get a new lease on the future.

# A TRUCK ASSOCIATION SECRETARY TELLS ALL

CONTINUED FROM PAGE 27

brings your cut down to you, an' you sends it to your Treasurer. An' if any o' these mugs puts in a rap, why we give 'em the business somehow. It's swell. You gets your dues; we get a piece o' dough, an' your members 'll love it!"

Secretary gulps several times and chokes over the question, "But how about the police?"

The three strangers are overcome with mirth. "Police? Ha, ha! That's a good one," chortles the leader. "Don't give it a thought, fella. Are we hired, or not?"

Secretary gulps anew. Feels weak, pale, and short of breath. "I-I-I-I haven't the p-p-p-power to hire anyone," he stutters. "That's all done by the Executive Committee, acting as a body. I'll be glad to take it up, though," he concludes eagerly.

"Yeah?" snaps the trio. "Okay, boy-friend, we'll be back to see you in a week or so. You'll find us right guys. We wouldn't try to muscle in here at all 'cept that the beer racket's goin' lousy, an' the alky is overstocked. We need the bucks. S'long!"

4.15 p. m.—Secretary, still white, continues to fan himself, muttering, over and over again, "Nice people! What a nice member that Joe Foozer is, sending that gang of gorillas down here. I'll call him up and give him hell.... No, on second thought, if he knows people like that, I'd better not

4.30 p. m.—Outside men return despondent. "What luck?" asks the Secretary.

"We got \$10?" they return.

"And fifteen complaints of price cutting, police activity against trucks, shakedowns by some phoney civic associations, and of pier conditions. Some of the members who complained wouldn't put their complaints in writing, but they wanted action just the same," interposes the second.

TURN TO PAGE 52, PLEASE

### Domestic New Truck Registrations by Makes and Months

	Autocar	Brockway-Indiana	Chevrolet	Diamond T	Dodge	Fageol	Fargo	Federal	Ford	G. M. C.	International	La France-Republic	Mack	Moreland	Paige	Pierce-Arrow	Relay	Reo	Rugby	Schacht	Sterling	Stewart	Studebaker	White	Willys-Overland	Total Sales Including Miscellaneous
January1931 January1930	223 160	152 249	7,436 8,754	167 242	1,173 1,608	23 41	30 186	109 169	11,051 13,233	443 727	1,306 1,835	28 43	225 345	16 51	27 14	3 4		267 698	32 90	15 21	62 145	84 97	297 104	214 413	157 440	23,965 <sup>4</sup> 30,241
February1931 February1930	176 135	107 235	7,254 10,332	134 207	1,124 1,269	31 43	36 152	97 162	10,678 14,008	387 552	1,344 1,928	34 44	183 298	12 29	20 43	4	28 30	260 565	29 67	11 20	47 74	85 155	267 91	202 320	182 431	23,028* 31,882
March 1931 March 1930	119 195	147 384	9,138 13,011	144 264		15 48	28 157	121 228	14,386 19,551	451 936	1,682 2,364	35 55	286 452	17 56	28 52	9		306 682	29 62	10 27	57 106	119 265	360 102	205 407	281 559	29,950° 42,182
April1931 April1930	155 216	215 492			1,575 1,684	33 52	17 153	150 252	17,755 21,757		2,295 2,740	58 71	344 566	19 57	20 64	18	42 61	354 903	31 47	21 47	104 147	166 314	381 98	228 480	346 564	
May1931 May1930	155 212	190 544		260 373		24 59	13 152	170 213	15,675 19,758			40 49	355 717	19 36		17	38 93	306 737	20 59	16 55	101 147	175 305	426 115	254 452	421 456	
June1931 June1930	179 183	144 481	8,970 9,761	240 261	1,285 1,113	37 56	14 118	144 158		513 889		45 56	294 446	11 29	24 19	17 2	29 43	466 581	20 54	25 38	59 109	136 207	288 102	267 412	351 352	
Total 6 Mos1931 Total 6 Mos1930	1,007 1,101	955 2,385	53,925 68,738			163 299	138 918	791 1,182	81,993 103,976	2,927 5,537	11,267 13,315	240 318	1,687 2,824	94 258	137 247	68 16	168 300	1,959 4,166	161 379	98 208	430 728	765 1,343	2,019 612	1,370 2,484	1,738 2,802	175,783 228,094

\*Georgia figures not included in totals.



NE year ago Studebaker announced the world's lowest priced 2-ton truck (\$895) . . . and the most powerful  $1\frac{1}{2}$ -ton truck chassis ever sold for \$695. Instantly Studebaker jumped to 6th place in truck registrations and has held that position.

The reason is plain. Studebaker offers

more real truck for less money. A comparison of specifications and performance will prove this. The 1½-ton chassis, for

instance, is priced at \$9.91 per horsepower. That is basic truck economy.

Studebaker trucks have 70-horsepower 6-cylinder engines, four-speed transmissions, four-wheel brakes and full-floating rear axles. They are built to Studebaker's 79 years of quality traditions.

# STUDEBAKER Trucks

### HOW TO CUT HIGH

CONTINUED FROM PAGE 43

rather than to fix personal responsibility. An employee found responsible, however, should be subjected to appropriate discipline. He may be required to pay for the damage, be suspended without pay, lose his bonus, or be discharged. Under all circumstances, fairness is essential.

#### **Bulletins**

Pictures and stories in the form of bulletins are recognized as one of the most effective means of reaching the driver. They drive home the idea of personal protection. Like any other kind of advertising, bulletins as well as posters must be attractively presented. In addition to printed bulletins obtainable from insurance companies and from the National Safety Council, home-made bulletins covering accidents and near accidents involving company vehicles can be used to advantage. Newspaper accounts of traffic accidents may be used. Humorous or cartoon bulletins help to attract attention and create interest. Illustrated announcements with simple typewritten statements of a recent company accident, citing causes and effects, get across quickly and effectively. Boards should be of ample size and conspicuously located.

#### Posters and Dash Cards

Attractive posters spread the safety gospel to the public as well as drivers. They may be placed on bulletin boards, outdoors and inside and outside of trucks. When used outside they serve as a medium for educating the public as to the need of its cooperation.

Dash cards represent another means of arousing and maintaining driver interest. Changed weekly, these cards keep safety alive with a suggestion or slogan relating to safe driving in general or to some seasonal hazard, such as skidding, school children in streets, weaving, etc.

#### House Organ Publicity

Companies publishing a magazine for drivers are afforded an excellent opportunity of keeping accident prevention to the forefront with articles on all phases of the subject—such as accident records of previous months, records of other companies, no accident records of individuals, description of accidents, improvements for safety in garage and on vehicles, safety meetings, bonuses, prizes, suggestions for safe driving, slogans, etc.

#### Prizes and Bonuses

Prizes and bonuses serve as an incentive to careful driving. While all drivers should feel a natural interest in accident prevention, cash awards keep the subject constantly before them. Awards should be given to every driver maintaining a certain standard, rather than to the "best" driver. Employees are not interested in a bonus that goes to someone else. Awards may be given to all drivers going a certain length of time without an accident, or it may consist of a certain percentage of the difference between the average accident cost per vehicle per year and the actual cost in the case of each individual, or a system of points or credits may be used in connection with a general bonus system covering other matters beside safety. Full details on the operation of any of these plans can be obtained from the National Safety Council or from the Metropolitan Life Insurance

#### Special Campaigns

Special no-accident campaigns are not substitutes for the continuous acturn to page 52, please

#### THE PRESIDENT'S PAGE

CONTINUED FROM PAGE 13

itself again, the wheels of supply will be turning, but how and when that can be accomplished, I do not know any more than the next man.

There is one thing that I am sure of. That is, that motor trucks are a success. The intelligent pioneering and good salesmanship of the many elements that have been contributing to the motor truck industry up to the present have established our product in an essential and highly important role in the commercial and industrial life of this country. On that bedrock of established fact and economical utility a great and prosperous industry will flourish in the future, even more than it has in the past.

Nor should we overlook the fact that during the past few years motor truck users have been a more important factor in the development of the motor truck than the motor truck manufacturer and his engineer. Our industry placed in the hands of American business a vehicle of greater possibilities than the industry itself was at that time aware. Given such a vehicle, American business men have constantly put greater demands on it with the result that today motor trucks are covering a wider range. both in mileage and in volume of commodities hauled, than anyone in this industry could have foreseen only a few years ago. It is my belief, therefore, that those motor truck manufacturers who have been most responsive to the new and progressive demands of motor truck users are those who are acquiring a steadily increasing sales momentum which will be more clearly revealed as business improves.

Assuming that the motor truck industry has now reached its maturity, it is clear that the present general business conditions must exert a different influence on it than was the case 10 years ago when our industry had the benefit of a new and undeveloped market. Our situation is now more comparable to that of the older industries. We are an established factor in the nation's commerce, and we. therefore, must enjoy prosperity and suffer adversity along with everyone else. The immediate prospects of the motor truck industry are inescapably dependent upon American business in general. There is in that situation, however, the great advantage that any improvement in general business will immediately be felt by our industry. We are no longer too small nor too young to be overlooked when the law of supply and demand gets into working order again.

Regardless of the stresses and strains, worries and disappointments that the depression has provided for all of us, I am convinced that after it is over we are going to recognize that it had many beneficial effects. Business men are learning to adapt themselves to prevailing conditions, to work harder and to plan harder, to adopt economies and curtailments. That is a big step toward recovery in itself. It is impossible to do business today as it was done in 1929. It is becoming more clearly recognized that equipment which was profitable then is worn out or is obsolete now. That fact alone has an important bearing on our industry. Motor trucks which have been standing idle in the garage for the past year are not going to be able to perform with the same satisfaction and the same profit, competing with new equipment, whenever their owners feel justified in putting them to work again. I doubt if the so-called "idle equipment" is going to prove to be as much of a menace to the recovery of motor truck sales as some people have been thinking.

Things are moving very rapidly in the motor truck industry these days, not in spite of the depression but because of it. We are developing a new ability to do business under new conditions, to fight for it and to work hard for it. I see it going on in my own organization and outside. I am sure, therefore, that our industry is going to respond promptly to the first influence of better business and that as a whole it will emerge from this period more efficient and more successful than it has ever been before.

Added convenience, more loading space . . .

# New Ford Pick-up

The pick-up light-delivery car, one of the more than forty standard Ford commercial types, is widely used by retail merchants, jobbers, distributors and others because of its sturdy and durable construction, alert performance, reliability and proved economy. It is a car that can be used for quick deliveries of many kinds of merchandise, as a service-car, and for all kinds of rough work with medium-size loads.

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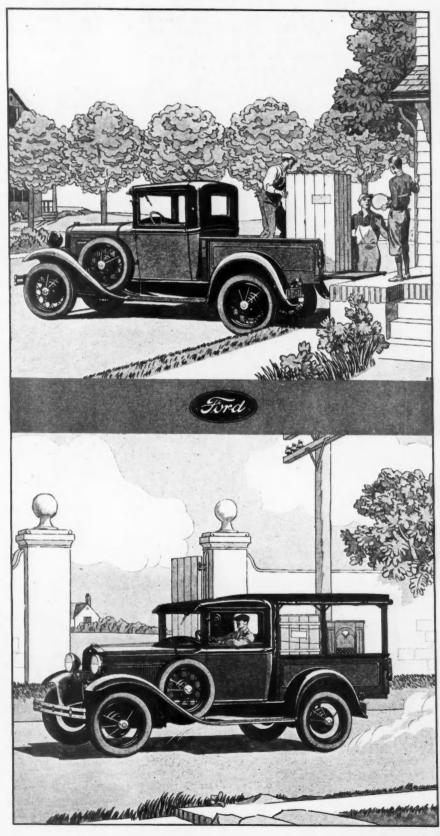
fore.

New features have been incorporated into the Ford pick-up which add greatly to its convenience, usefulness, and value. The loading-compartment is of improved design. It has a flat bottom with straight sides and with square corners, providing full-width loading-space at the floor. The floor is of sheet steel with pressed skidstrips. The body is larger, with a capacity of 22½ cubic feet.

The Ford pick-up is available either with or without a canopytop. The top, which is provided with curtains, is supplied at small additional cost.

Another new Ford type is the de luxe pick-up, in which body and cab have the appearance of a single unit. Exterior metal parts are of Rustless Steel, there are chromium-plated brass side-rails, and the spare wheel is carried in a fender-well.

Any Ford dealer can supply a Ford unit, specifically adapted to your needs. In most principal cities, there are centralized exhibits of Ford commercial units.



## A TRUCK ASSOCIATION SECRETARY TELLS ALL

CONTINUED FROM PAGE 48

"Did you give it to them?" asks the Secretary.

The outside men respond as one: "No, Chief, we brought them in to you—the complaints, we mean."

"Pals," observes the Secretary wearily. "Just pals."

"Don't be like that," urges outside man No. 1. "There isn't any answer to some of these complaints. We're doing the best we can. Go ahead and answer the following:

"Mr. Hooker lost his wife a month ago. He's been a member for five years. She owned some property. She left it to her sister instead of to Hooker. The laws of this state give the husband no rights in his wife's property. He wants something done about the will she left. He says he knows it isn't organization work, but that you might be able to help him. How?"

"I dunno," groans the Secretary.

"Then," went on the first outside man, "Mr. O'Neer for the last three years has been telling his wife that the organization meets twice a week. Now she's discovered we only have a monthly meeting, each month. He says you have to pull him out of it by writing her a letter that he has been on a special committee which does meet twice a week. What do we do about that?"

"Go ahead, ask me riddles," rejoins the Secretary. "Anything else?"

"Yeah," continues the first outside man, "Mr. Leary has just been elected President of the Civic Association in his home town of Homehearth. He's going to be inaugurated on next Thursday. He wants you to dash off a little speech for him. Just about 4000 words, and dealing with civic problems in his locality."

"But I don't know where the hell Homehearth is." wails the Secretary.

"I mentioned that," answers outside man No. 1, "but he said that shouldn't make for difficulties because you can deal in generalities."

"And only \$10 in dues?" sobs the Secretary.

"Tha's all," replies the first outside man. "Business isn't very good now, they all say."

"It helps, that observation," allows the Secretary. "And now that it's 5 o'clock you can all go home. I'll stay here and get some work done."

"Gonna make whoopee, Chief?" asks the first outside man eagerly.

"Whoopee?" echoes the second outside man.
"I wouldn't mind a little drink my-

self, now that it's after 5 o'clock," says Miss Brown demurely.

"No whoopee, but work-ee," snorts the Secretary. "And good night, my children. May you pound a tranquil ear—the whole damn bunch of you until, praise God, we meet again."

Secretary watches the outside men and Miss Brown leave the office. Feels very sorry for himself, but finally strolls over to typewriter, muttering, "I think I'll write this day's work for COMMERCIAL CAR JOURNAL. Cloaked, of course, in some anonymity and hyperbole."

### SALESMEN TO SELL MUST HAVE TRUCKS TO SHOW

CONTINUED FROM PAGE 34

"We could have it here tomorrow and arrange to drive it out to your place of business the following morning."

"All right, go ahead and get it," the customer said. "I'll expect to see it at that time, but don't disappoint me."

After the customer left, the manager wired our other branch asking them to get the truck ready immediately and then sent one of our men after it. The remainder of the story is like a happy fairy tale. The truck arrived, it was demonstrated and sold.

It's the same old story—what's sauce for the sales manager is apple-sauce for his salesmen. Trouble and expense meant nothing to the sales manager when he was personally engaged in the heat of battle, but try and get the same cooperation on your own hook. It's like butting your head against a rear axle housing.

The point I want to get across is The average sales manager does not seem to understand or want to understand that the prospect is not always interested enough to take time out to visit the dealer's or branch's showrooms. He also refuses to recognize, perhaps, in his anxiety to keep selling costs down, that it is part of the salesmen's job to arouse interest and make it as easy as possible for a customer to see a truck. Obviously, the easiest way of accomplishing these things is to take the truck model under discussion to the prospect's place of business. Salesmen with trucks parked at their customer's doors have a real chance of getting the fountain-pen on the dotted line because instead of talking from a piece of paper they talk from the real thing, the truck.

Yet it seems to be the policy of many sales managers to place all kinds of obstacles before salesmen trying to close deals via the demonstration route, submitting to their requests only after considerable wrangling, battling and fighting. There is no cooperation. The same is true when salesmen bring prospects around to the showroom only to find that the model wanted is gone. In the majority of cases the salesmen's only recourse is to show a somewhat similar model as a makeshift. Bringing in a truck from out of town, of course, is out of the question.

Why not make sauce for the gander sauce for the goose?

## HOW TO CUT HIGH

CONTINUED FROM PAGE 50

tivity outlined, but feature stunts designed to reawaken interest in what may have become an old story. They may be conducted for a limited time, usually a week or a month, and are nothing more than an intensive application of the standard methods already discussed plus special features such as the following:

A personal letter from a high official, to each driver, urging particular care and a clean record.

Special bulletins and posters announcing the campaign.

A special bulletin board on which is marked each day the progress of the campaign.

Special exhibits including miniature reproduction of a street intersection illustrating the right and wrong ways of driving.

Additional letters or postcards mailed each day to employees' homes as reminders.

Safety pledges signed by the drivers. Special outside speakers, special meetings, pay-envelope inserts, etc.

If properly conducted, a special campaign will not only bring about a good record for the period but will show what can be done when everyone puts his shoulder to the wheel.

The National Safety Council which has local councils in most large cities gathers information about accidents and ways of preventing them from the local groups and then sends out general information. Work of the local councils in reducing accidents is aided by general direction of the national body and by exchange of ideas with other groups. The National Council has a number of publications, news letters, records, pamphlets, studies, etc., on the subject of accident prevention which are prepared for fleet owners. Membership brings to the fleet operator double-barreled aid in organizing and prosecuting an aggressive safe-driving program.

COMMERCIAL CAR JOURNAL wishes to acknowledge the help it received in the preparation of this article from material drafted by Sidney J. Williams, director, public safety division, National Safety Council.

# COMMERCIAL CAR JOURNAL

# TABLE OF TRUCK SPECIFICATIONS

Corrected Each Month From Data Supplied Direct by Manufacturers

(KEY TO REFERENCES ON PAGE 76)

IVE of the 11 models added to specifications this month are six-wheelers, four Corbitts and one Hug. The Hug model is described on page 39 of this issue. The models listed include:

Acme: 10X Special, 5-ton.

Brockway: 80 11/2-ton, 92 2-ton.

Corbitt: Six-wheelers 20SW6, 28SW6, 36SW6,

Fisher-Standard: 20A 2-ton, 25A 2½-ton. General Motors: T-45 3, 3½ and 4 tons.

Hug: 99 10T six-wheeler.

#### Tractor Trucks

		O	eneral		Gear	Set		Rear	Axle	***			G	eneral		Gear	Set		Rear	Axie	
Make, Model and Capacity	Chassis Price	Standard W.B.	Gross Vehicle Wt. See Key Note	Chassis Wt. Stripped	Make and Model	Location No. of Forward Speeds	Aux. Locat. and	Reduc. in High	Reduc, in Low	For Corresponding Truck Model, See Specifications Under Tonnage Noted	Make, Model and Capacity	Chassis Price	Standard W.B.	Gross Vehicle Wt. See Key Note	Chassis Wt. Stripped	Make and Model	Location No. of Forward Speeds	lux. Locat. and	teduc. in High	teduc. in Low	For Corresponding Truck Model, See Specifications Under Tonnage Noted
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	Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.R. Furnished	Gross Vehicle Wt.	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max. Brake H.P. at Specified R.P.M.		Piston Material		Length Main Bearings	No. Main Bearings		Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Line Number
345	1000 Pounds Chevrolet. Ind. Com. Dodge Bros. UF-10 Dodge Bros. F-10 Fargo Packet. F-10 Ford Uen. Mot. T11. A. KYGen. Mot. T1-15 Paige Jr. 15 Studebaker. S1 Willys Six. C-113 1500 Pounds	435 515 595 340 625	109 109 103 109 121 115 115	141	4025 4125 3800 6500 4435	1925 1975 1935 1680 1980 2425 2350	B 5.00/19 B 5.25/19 B 5.00/19 B 4.75/19 B 5.00/19 B 5.50/20 B 5.50/19	B 5.00/19 B 4.50/20 B 5.50/19 B 5.50/20 B 5.50/19 B 6.00/18 B 5.25/19	Own Own Own Own Own A Pontiac Own Con 19E Own Own C-113	6-3 t x3 % 4 4-3 % x4 % 6-3 % x4 % 4 6-3 % x4 % 6-3 % x3 % 6-3 % x3 % 6-3 % x4 % 6-3 % x3 % 6-3 % x3 % 6-3 % x3 %	194.0 196 211.5 189.8 200.5 200.3 200.3 207.2 214.7 221 193.0	26.3 21.0 25.3 23.4 24.0 26.3 26.3 27.3 21.3 25.3		T	İ		61% 61% 7 55% 10% 814 611	İ	No No No No No No	Car Car Car Str Zen Mar Mar Ste Sch Str Til	G M M	N-E Own D-R D-R	D-R D-R D-R N-E D-R D-R D-R D-R D-R	11 11 11
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				Ger	neral		Tire	Size				E	ngine							Fu			rical tem	
Line Number	Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.		Valve Arrangement	Piston Material		Length Main Bearings	No. Main Bearings		Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Line Number
11 23 33 45 66 7 89 101 112 113 114 115 116 117 118 119 119 119 119 119 119 119 119 119	1½ Ton—Contigramm BX4, 1½-2 Gramm BX4, 1½-2 Gramm BX4, 1½-2 Gramm-Bernstein J Hahn & Seiden. I' Hahn. 317H Indiana 111 Indiana 111 Indiana 189 International A-2 International B-2 International	895 995 1450 1450 12225 1450 12225 1500 1900 1900 1900 1905 1195 895 1195 1195 1195 1195 1195 1195	131 131 146 142 129 149 136 138 140 144 145 155 140 154 168 129 129 129 129 129 129 149 149 149 149 149 149 149 149 149 14	180 180 165 168 169 169 161 152 175 172 160 160 160 160 160 160 160 160 160 160	10000 10000 9200 9000 9000 9000 9000 900		B 6.00/20 B 6.50/20 B 6.00/20 B 6.50/20 B 6.00/20 B 6.50/20 B 6.00/20 B 6.50/20	DB6.00/20 DB6.00/20 DB6.50/20 P 32x6 P 32x6 P 32x6 B6.00/20 DB6.00/20 DB6.50/20	Con W-10 Con 25A Bud J-214 Con 18E Con 16C Her Con 18E Con 18E Lyc 48LH Con 18E Lyc 48LH Con 18E Lyc 48L Her WXB Con 16C Bud HS Bud H-298 Own BL Wau 6TL Bud DS 6 Bud HS Gown Con 16C Con 16C Con 16C Bud HS Gown Own Own Con 22A Con 25A Lyc AFE Lyc 48L Own 4A Wwu 48 Www MS Own C-131 Con 84 Con 16C Con 64 Con 16C Con 64	4-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6	200. 4 214. 7 214. 0 248. 2 248. 2 224. 7 224. 0 248. 2 248. 3 248. 2 248. 2 248. 3 248. 2 248. 2 248. 3 248. 2 248. 3 248. 2 248. 3 248. 2 248. 3 248. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	24.0 27.3 27.3 27.3 27.3 27.3 27.3 21.2 21.2 21.3 22.3 22.3 23.3 22.3 23.3 22.3 23.3 22.3 23.3 2	50-2800 74-3300 66-3000 66-3000 65-2760 46-2000 39-2400 54-2700 39-2400 61-3000 61-2750 67-2400 83-2200 67-2400 83-2200 70-3200 68-2600 68-2600 68-2600 70-3200 69-2760		AACA COCCOCACCOCCACCAGGGGGGGGGGGGGGGGGGG	AND THE PROPERTY OF THE PROPER	5% 34 10 0 4 10 10 10 10 10 10 10 10 10 10 10 10 10	3 PCC 77 FPP 77 FPCC 33 PCC 77 FPC 4 PCC 4 FPC 4 PCC 4 PCC 7 PCC 8	No No No No No No No No No No No No No N	Till Till Zen Str Zen Zen Zen Zen Zen Zen Zen Zen Zen Zen	M M M V V G V V V V M V V V M G G V V V M V V M G V V V M M V V V M M V V V M M V V V M M V V V M M M V V V M M M V V V M M M V V V M M M V V V M M M V V M M M V V M M M M V V M	A-LL D-LL D-LL D-LR A-LR D-LR A-LR D-LR A-LR D-LR A-LR D-LR A-LR D-LR D-LR D-LR D-LR D-LR D-LR D-LR D	A-LL R-LL-R-R-R-LL-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R-R-R-LL-R	1234566789901111213415667889911121341561177118902212233233453673389400144234445
47	CondorCB FederalF7 GrammB	1460 1525	140 132 140	174 152 174	12000 9000 12000	376	B 6.50/20 B 6.50/20 B 6.50/20	DB6.50/20 DP30x5 DB6.50/20	Con 16C	6-314 x 4 14 6-314 x 4 14 6-314 x 4 14	224. 248. 224.	0 25.3 0 27.3 0 25.3			- 1	23/8 23/8 23/8	1	4 PO 7 PO 4 PO	No.	Zen Zen Zen	M	A-L D-R A-L	A-L D-R A-L	46 47 48
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		Clutch	Gear	set		No.	Rea	r A	xle			Front Asle	Brai	kes			Frame	-	Body	Moun Data	ting	Spr	ings		
Line Number	Radiator Mako	Type and Make	Make and Model	Location No. of Forward Speeds	Locat. and	Universals Make and	Make and Model	Final Drive and Type	Drive and Torque	Reduc. in High		Make and Model	Service	Area Service Brakes		Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type	Line Number
11 11 12 22 22 22 22 22 24 A A A A A A A A A A	Per Mod G&O	D.B-L P.Bon P.Lon P.Lon P.Lon P.Lon P.Bon	. M.M. "O W-G T7 B-L W-G T7 B-L W-G T7 B-L W-G T7 B-L W-G T8 B-L 214 W-G-BB B-L 214 B-L 214 B-L 214 B-L 214 B-L 214 B-L 214 B-L 214 B-L 214 B-L 216 B-L 214 B-L 216 B-L 216 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 35 B-L 200 B-L 300 B-L 3	55555555555555555555555555555555555555	4 No 4 No 4 No 4 No 4 No	MMM. M.M.M. Spii 4 Spi 3 Spi 4 Spi 3 Spi 4 Spi 2 Spi 4 Spi 3 Spi 4 Spi 3 Spi 4 Spi 3 Spi 4 Spi 3 Spi 4 Spi 3 Spi 4 Spi 3 Spi 4 Spi 3	Tim 52200 H Tim K Cla Col Cla Col Col Tim K Cla Col Col Tim 53200 H Tim 5200 H Tim 5200 H Tim 5200 H Tim 52200 H Tim 5200 H Tim 54200 H Tim 54200 H Tim 5400 H Tim 5400 H Tim 5400 T Tim 5200 T T Tim 5200 T T Tim 5200 T T T T T T T T T T T T T T T T T T T	BI SF SF SF	HR HEHEHEHEHEREH FREHE	5.5.5.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8	26.4.2 26.39.1 26.39.1 34.33.3.3 3.34.3 3.34.3 3.35.3 3.37.1 3.32.9 3.34.3 3.34	Tim 11703 H Tim 8 Shu 8 Shu 8 Shu 10 Col 10 Wm 101 10 Wm 200 10 Wm 200 10 Col 10 Wm 200 10 Wm 20	LAIH LAIH LAIH LAIH LAIH LAIH LAIH LAIH	4321; 2927; 2925; 2927; 2926; 2927;	FD FF FT FT FT FT FT FT FT FT FT FT FT FT	LOS LOS LOS LOS LOS LOS LOS LOS LOS LOS	6x21/4x1/4	COCHET COCCOCCEPPPPCCCCCCCCCCCCCCCCCCCCCCCCCCC	133 ½ 126 ½ 126 ½ 126 ½ 126 ½ 126 ½ 133 ½ 133 ½ 144 133 ½ 144 133 ½ 144 133 ½ 157 130 ½ 121 ½ 126 126	56 Opt 58 743,743,644,7743,664,664,664,664,664,664,664,664,664,6	34 4 334 4 34 4 334 4 334 4 334 4 334	36x2\\\ 42x2\\\ 42x2\\\ 42x2\\\ 41x2\\\ 41x2\\\ 41x2\\\ 41x2\\\ 41x2\\\ 40x2\\\	Cont' 45x2 14 45x2 14 45x2 14 45x2 14 45x2 14 45x2 14 45x2 14 15x2 14 46x2 14 55x2 14 55x2 14 56x2 14	NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN	5 6 7 8 9 9 10 111 13 14 15 16 17 18 19 9 10 11 12 12 12 15 16 17 18 19 19 19 19 19 19 19 19 19 19 19 19 19
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			-	neral		Tire	Size				E	Engine								Syst.	e m	Elec Sys	tem	1
Line Number	Make, Model and Capacity	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.		Valve Arrangement	Piston Material	Dia. Main Bearings	Length Main Bearings		Oiling System	Governor Make	Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Line Number
323 340 445 551 FEBRESS 54 FEB 551 FEBRESS 54 FEB 551 FEBRESS 55 FEBRESS 551 F	White 160-161 t to 2T white white 162 1 to 2T white white 162 1 to 2T white white 162 1 to 2T white white 162 1 to 2T white white 162 1 to 2T white white 162 1 to 2T white white 162 1 to 2T white white 162 1 to 2T white white white 162 1 to 2T white white white 162 1 to 2T white wh	150 151 180 150 150 175 160 175 160 175 160 175 160 175 160 175 160 175 160 175 160 175 160 175 160 175 160 175 175 175 175 175 175 175 175 175 175	183 1194 1185 1156 1156 1156 1156 1156 1156 1156	9300 9500 11500 11500 11500 11500 11000 11000 11000 13000 13000 12500 13000 13000 13000 13000 13000 1500	48800 5500 4700 6800 3325 37.525 37.525 4450 4900 4880 4900 5840 5540 5540 5550 6550 6550 6550 6550 65	P 32x6 B 7.50/20 B 7.50/20 B 6.50/20 B 7.50/20	DB6.50/20 DB6.50/20 DB6.50/20 DB7.50/20 DB7.2x6 DB7.50/20 DB7.50/20 DB7.50/20 DB7.00/20 DB7.00/20 DB6.50/20 DB6.50/20 DB7.00/20 DB7.00/20 DB7.00/20 DB7.00/20 DB7.00/20 DB7.00/20 DB7.50/20  Bud D86 Bud H86 Con 16C Con 16C Con 16C Lyc 48L Lyc 48L Lyc ASA Own GRC Own GRC Own GRC Own GRC Gon 16C Con 16C Con 16C Con 16C Con 16C Con 16C Con 16C Bud Bud Ba Gown Wau MS Con Wau 6ML Bud DW6 Bud D86 Bud D86 Bud D86 Bud D86 Con 16C Con	4 4 15 5 18 18 18 18 18 18 18 18 18 18 18 18 18	251.3 309.6 6.0 309.6 9.0	33.7 38.4 33.8 33.8 33.8 44.0 38.4 40.8 31.5 7.3 38.4 40.8 33.7 40.8 34.8 34.8 34.8 34.8 34.8 34.8 34.8 34	70-1300 68-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 67-2800 68-3000 68-3000 61-2800 61-2100 64-2100 68-3000 61-2800 61-	COCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOC	COCCANOCOCCACCACCACCCCCCCCCCCCCCCCCCCCC		1789317892122222	777774447774443733377777745  4477777744477773477777744	೨೮೨೮೪೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮೮	МНИЙО МОЛО ОО ОО ОО МИНИКО В В В В В В В В В В В В В В В В В В В	zen zen zen Stronter	PAMPS CANDER MENT CONTRACT CON	DDDDDD-A-A-A-DA-A-LLL-RLL-RLL-RNRRRRL-B-LL-RR-RR-RR-RR-RR-RR-RR-RR-RR-RR-RR-RR-	A-L D-R D-R D-R D-R D-R D-R	101 112 113 114 116 112 112 113 114 116 112 112 113 114 116 117 118 119 119 119 119 119 119 119 119 119	

Clutch	Gear	Set		Re	ar A	rle		_	Front Axie	Bra	kes			Frame		Body	Moun Data	ting	Spi	ings	
Radiator Make Type and Make	Make and Model	Location No. of Forward Speeds	Aux. Locat. and Speeds	ake and Model	Final Drive and Type	Drive and Torque	nc.	Reduc. in Low a	Make and Model	Service	Area Service Brakes.	Hand	Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type
Chi D.Ful	B-L 314 B-L 314 Ful Ful Ful Ful GU14 Cla B-L 20 B-L 20 B-L 51-5 Own Own Own Own Own B-L 35 B-L 214 Ful Ful Ful Ful Ful Ful Ful S5-4 B-L 35-4 B-L 35-4 B-L 314 WG-T9 Ful MLU	U 4 U 4 U 4 U 4 U 4	No Pet No	Tim 54200H Wils 4610 Wils 4610 Own 30 Own 30 Own 20 Own 60 Own Own Own Own Own Tim 54200 H Tim 63702 Tim 54000 Cla Cla Cla Cla Tim54200-A 3 Own 56 Own 7C M.2 Own 4CB Tim 56001H Tim 63720H Tim 56001H Tim 63720H Tim 56011H Tim 63720H Tim 563720H	WF SFF BFF SFF SFF SFF SFF SFF	R	23 34 34 34 34 34 34 34 34 34 34 34 34 34	1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	Tim 14703H Shu 310 Tim 14704 H Col 5530 Tim 14704 H Own Own Own Own Own Tim 12703 H Tim 12703 H Col 5530	L41H L41H L41H L41H L41H L41H L41H L41H	2400 452250 3888 3947 2589 2889 2889 2889 2899 452289 2289 2289 2288 2288 2288 2288 2288	ID TI 2I FX FX TX TX TX TX TX TX TX	Han Han Ross Ross Ros Ros Ros Ros Han Han Han Ros Ros Ros Ros Ros Ros	7 t. x2 % x 1/4 6 x3 x 1/4 6 x3 x 1/4 7 1/4 x 1/4 6 x 3 x 1/4 7 1/4 x 1/4 6 x	CCCCCAPPECCCCCPPPPPPCCCCCCCCCCCCCCCCCCC	Var Var Var Opt 126	78 84 88 699 83 52. † † † † † † 67 † † † † 76 83 76 63 ¼ 68 ½ 68 ½ 79 ½ 77 9 ½ 77 9 ½	2 34. 34. 33. 34. 34. 34. 34. 34.	400234 400234 400234 400234 400234 360234 360234 360234 360234 360234 360234 360234 360234 360234 360234 40024 400	Cont' 54x3 54x3 554x3 554x3 554x3 554x3 554x2 554x2 554x2 554x2 554x2 554x2 554x2 554x2 554x2 554x3 55	1
G&O P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B Per P.B&B G&O D.B-L Chi D.B-L Lon D.B-L Lon D.Ful Lon D.Ful Lon D.Ful Lon D.Ful Lon D.B-L Solom	B-L 314 B-L 314 B-L 35 Ful MGOC B-L 51-4 B-L 51 B-L 51 B-L 55 B-L 35 B-L 35 B-L 35 B-L 35 B-L 314 B-L 314 B-L 314 B-L 314 B-L 314 B-L 314 B-L 315 B-L 315 B-L 314 B-L 35 B-L 315 B-L 35 B-L 315 B-L 35 B-L 315 B-L 35 B-L		NEUKAAA TERRETAKKA KANDAN KAND	Tim 56200H Own SD Tim 56200H Tim 64800H Tim 64800H Tim 65706L Tim 63702 Wis 56200H Tim 63702 Wis 56200H Tim 65200H Tim 65200H Tim 65200H Tim 65200H Tim 65200H Tim 56200H Tim 5620H Tim 562H	B FF FF FF FF FF FF FF FF FF FF FF FF FF	RR ::: HHHRRRHHHRH :: HHHHR	7.0 4 6.8 4 8.05 1 8.05 3 8.5 6 6.5 3 8.5 6 6.5 3 8.5 6 7.8 6 8.5 5 8.6 6 8.5 5 8.6 6 8.6 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	54.4.9 54.3.0 6.2.3.0 6.2.3.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Tim 14703BX Tim 33010H Tim 14703H Shu 5429 Shu 5572 Col Shu 33020H Wis 15733 H Tim 14704 H Col 5530 Col 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Tim 33020H Cla F304 Tim 31000H Own Tim 14704H Tim 15733 H Tim 15733H Tim 30020 East 433F East 433F East 433F East 433F Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Shu 5550 Tim 33000H Tim 14703H Tim 15733H Tim 15733H Tim 14703H Tim 15733H Tim 15735H Tim 14704H Tim 15733H Tim 1573H Tim 15733H Tim 1573H T	LAIRY LAIR LAIR LAIR LAIR LAIR LAIR LAIR LAIR	360 381 355 355 355 355 355 355 355 355 355 35	ZIM TX GCD GCDX FD FFX FD FTX FTX FTX FTX FTX FTX FTX FTX FTX FTX	Ros Ros Ros Ros Ros Ros Ros Ros Ros Ros	8x2 ½ x½ 8x3x½ 8x3x½ 6x2 ½ x½ 7x3 ½ x½ 6½ x3½ 7 ½ x3¾ 6x3 ½ x ½ 6x3 ½ x ½ 7x3 ½ x½ 6x3 ½ x ½ 6x3	COTTOCCCCCPPPPPPCCCCCCCCTTTTCCCCCCCCCCC	173   173   173   173   173   174   174   174   174   174   175	Opt 69 84 Opt 78 97 38 81 % 104 8	35443314344777343324344777343324344477734332434447773433243344333243344333243344333243333333	42x2   44x2   44	54x3 56x3 56x3 56x3 56x3 56x3 56x3 56x3 56	* * * * * * * * * * * * * * * * * * *

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			-	Gen	eral		Tire	Size				E	ngine							s	Fue		Elect Syst	
Make, Model and Capacity	Chassis Price	1	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max, Brake H.P. at Specified R.P.M.	et I	Camshaft Drive		Length Main Bearings	1 - 1	Oiling system	Governor Make	Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make
3 Ton—Cont Autocar Available. 7-3 Available. 7-3 Available. 7-3 Available. 7-3 Brockway 1-7 Broc	4600 4680 3697 3697 3697 3697 3697 3697 3697 3697	0.0000000000000000000000000000000000000	74 70 70 70 70 70 170 168 160 190 168 168 168 168 168 168 168 168	242 Opp 2000 2204 208 Opp 2011 2204 208 204 220 2204 220 2204 240 240 220 240 250 240 250 250 201 250	22000 16000 17000 17000 17000 17000 17000 17500 17200 17200 17500	65007750076207622767447676767676767676767676767676767	P 36x8 P 34x7 D B 9.00/20 D B 7.50/20 D B 7.50/20 D B 7.50/20 D B 9.00/20 D B 7.50/20 D B 9.00/20 D P 34x7 D P 34	DP36x8 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DP34x7 DB8,25/20 DB7,55/20 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x7 DP34x7 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP34x7 DB8,25/20 DB8,25/	Own ML Wau ML Wau MK Con Con Con Con Con God Bud BA-6 Bud BA-6 Wau 6ML Bud BA-6 Wan BBud BBU-1 Bud K428 Con 16R Con 16	2. ca	404.0 0 358.1 380.9 380.1 9 380.3 38	43.8.4.4.4.8.8.9.4.40.8.9.4.40.8.9.4.40.8.9.4.40.8.9.4.40.8.9.3.8.4.4.8.6.8.9.7.3.3.3.6.2.8.3.3.3.8.4.4.8.6.8.3.8.3.3.3.3.8.4.4.8.6.8.3.8.3.3.3.3.8.4.4.8.8.9.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3	92-2400 67-2300 87-2500 73-2400 89-2400 100-2400 89-2400 77-2200 98-2700 98-28	LLLHHHHLLLLLLHHHHLLLLLLLLLLLLLLLLLLLLLHHHH	COONNANO COO ACCOMOCOO BBBAAAACCOO COACCOO GGGGGGGGGGGGGGGGGGGGGGG	######################################	142½2546454511111111111111111111111111111111	FEFFOOOOOFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	######################################	Режикререней и получения в по	Strheisen der Streiner der Stre	VVVMMMMMVVVVVMMMVVEEEEVMVMMMMGVMMMMMMMMVVVVVVMMVVMVVMMVVM	DODA-A-A-A-A-BODA-A-A-A-DODI-A-A-A-L-L-L-L-L-L-L-L-L-L-L-L-L-L-L-L-	NRRLLLLLRRRNLLLLRRRNLLLNREEERRR. NNNLLLRRRRRRELLLLLLLLLLLLLLLLLLLLLLLLLL

-	Clutch	Gear	Set		No.	Re	ar A	xle			Front Azie	Br	akes			Frame		Body	Moun Data	ting	Spr	ings	
Radiator Make	Type and Make	Make and Model	Location No. of Forward Speeds	Aux. Locat. and Speeds	Universals Make and N	Make and Model	Final Drive and Type	Drive and Torque	Reduc. in High		Make and Medel	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Reil	Type	Cab to Rear of Frame	Cab to Rear Axie	Width of Frame	Pront	Roar	Auxiliary Type
You G&O G&O G&O G&O G&O G&O G&O G&O G&O G&O	P.B&i P.B&i P.Own P.Own D.B-I P.B-I P.B-I P.B-I P.B-I D.B-I D.B-I D.B-I D.B-I P.B-I D.B-I	Full HOGE B-L 51 B-L 51 B-L 51 B-L 314 Own B-L 314 B-L 51 Cov B-1 Cov B-1 Cov Rus-4 Cov Rus-4 Cov Rus-4 Cov Rus-1 Co		8 4 0 4 0	3   180   4   180   18	Own Own Own Own Own Own Own Own Own Own	WEFFIELD WEST STATES OF THE ST	ARREN REHHHERRERHEITE REHLITET LILLITET LILLITET EFFEFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	0077788855355btb766076766607788855355b6887854477866767666076688	1	Shu 5582B Shu 5582B Shu 5582B Shu 5582B Shu 5582B 3 Own 3 Own 8 Own 8 Own 8 Own	OAIM I AIIM BAIM BAIM BAIM BAIM BAIM BAIM BAIM	500 - 3936557 - 393657 - 39367 -	TEXTED TO THE TOTAL TOTA	Ross Ross Ross Ross Ross Ross Ross Ross	TX2	TITIOCOCO HITIIIII	Opt 142 142 142 142 142 144 132 146 147 148 148 148 148 148 148 148 148 148 148	4 844 104 104 104 104 104 104 104 104 104 1	4022	14   14   14   14   14   14   14   14	54x3 50x3 50x3 50x3 50x3 54x3 554x3 564x3	S S S S S S S S S S S S S S S S S S S

			Gen	eral		Tire	Size				E	ngine								Fue		Elect	
Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max. Brake H.P. at Specified R.P.M.	Valve Arrangement		Dia. Main Bearings	Length Main Bearings	No. Main Bearings	Olling System	Governor Make	Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make
3½ Ton  Acme	3322 3483 3900 428(352(450) 5335(474) 533(525) 369(399) 379 379 399 379 465 575 645 445 420 420 4496	125 Opp 124 125 125 125 125 125 125 125 125 125 125	88 195.5.10.20.5.20.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	15000 15000 21800 19500 121000 18400 15000 18500 21000 18500 16000 16000 16000 24000 24000 24000 20000 16500	0330 8180 8180 8180 8180 8180 8180 8180	F 4028 P 4028 P 4628 P 4628 P 4628 P 3628 P	DP34x7 DP34x7	Lyc HF Bud DW6 Bud K428 Con HaS 151 Con 20R Lyc TS Con 18R Her WXC Wau 65RL Her WXC Wau 65RL Bud BA 6	4-1/x 5 1-6-1/x 1-7-1/x  420.0 330.0 428.4 380.9 354 339.3 360.8 462.3 411.0 411.0 381.4 462.3 462.	36.47.40.83.49.40.84.40.84.40.84.40.84.40.84.40.84.40.84.40.84.40.84.40.84.40.84.40.84.40.84.84.84.84.84.84.84.84.84.88.88.88.88.	55-2000 80-1800 87-2400 45-1450 92-2400 93-2400 93-2400 93-2400 93-2400 93-2400 93-2400 93-2400 83-2100 83-2100 83-2100 73-2400 77-2100 85-200 83-2100 76-2500 100-2400 97-2756 1100-2400 97-2756 120-3200 83-2100 100-2400	LIBLULLILLICOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCO	00000000000000000000000000000000000000	AND THE THE THE PROPERTY OF TH	90 to 1222 to	3 727777777444477377744444777745477777744447777774444777777	FP FP FP FP FP FP FP FP FP FP FP FP FP F	Bu Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha	Str Str Str Str Str Str Str Str Str Str	GVVGGVVVVVMVMMMMMMVMMVMMMVVVVMMMVVMMMV	ED-A-A-D-DR-R-R-R-L-I-R-R-L-R-R-R-L-L-R-R-L-L-R-R-L-L-R-R-L-R-R-L-R-R-L-R-R-L-R-R-R-L-R-R-R-R-L-R	A-L D-R A-L D-R A-L D-R D-L A-L D-R D-R R D-R R D-R R D-R R D-R R D-R R D-R R D-R D-	
4 Ton  Acme	480 480 533 4297 307 307 565 520 533 183 183 183 183 183 183 183 1	190 190 190 190 190 190 190 190 190 190	2 Opp o 199 o 166 222 opp o 199 o 19	19000 19305 19305 19506 19	7500 8800 8800 8800 8800 8800 8800 8800	B9.75/20 )P 36x8 )P 34x7 )P 36x8 )P 34x7 )P 36x8 )B 9.75/20 )P 36x8 )B 9.75/20 )B 36x5 )B 36x5 )B 36x5 )B 36x5 )B 36x5 )B 36x5 )B 36x6 )B 36x8 )D 36x8  D	DP36x8 DB9.75/20 DS36x6 DS36x6 S 36x14 DB8.25/20 DB9.00/20 DB9.75/20 DB9.75/	Con 20k Wau 6AB Con Wau 6AB Con Wau 6AB Con Jwau 6RL Bud YTU Bud BA 6 Con 21k Con 21k Con 21k Con 21k Con 28k Con 18k Con 18k Con 18k Con 18k Con 18k Con 18k Con 21k Con 20k	0-45/x45 0-45/x45 0-45/x45 0-45/x55 0-4	4 331	40.8.8 38.8.4 48.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8.4 48.8.4 38.8 38.8	8 89-240 8 75-180 4 73-200 6 100-200 6 100-200 9 77-200 4 50-140 6 100-200 9 94-220 6 100-200 9 94-220 1 124-220 1 102-220 1 102-240 1 102-240 1 102-200 1 102-2	HLL    HHHHLL    HLL    HLL	00000000000000000000000000000000000000	A CANADA	13 4 4 4 4 4 1 1 1 2 4 1 1 1 1 2 1 2 1 1 1 1	14773347 · 77773447777774444444 · 7757477477777777777777	PERCEPCE POR PERPONDENCE PERCEPCE PERCE	Haa Bu Haa Waa Waa Waa Waa Waa Waa Waa Waa Waa	Str Zen Zen Str Zen Zen Zen Zen Zen Zen Zen Zen Zen Zen	MMVVVVMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM	D-R A-L D-R D-R D-R D-R D-R D-R D-R D-R D-R D-R	A-L D-R D-R D-R D-R D-R D-R A-L A-L A-L A-L A-L D-R D-R A-L D-R A-L D-R A-L D-R A-L D-R D-R D-R D-R D-R D-R D-R D-R D-R D-R

1	1	Clutch	Gear	S	et		. o	Re	ar A	xle			Front Axle	Bra	kes			Frame	_	Body	Mous	ating	Spr	ings	
	Radiator Make	Type and Make	Make and Model	Location	No. of Forward Speeds	Aux. Locat. and Speeds	Universals Make and	Make and Model	Pinal Drive and Type	Drive and Torque		Reduc. in Low	Make and Model	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Roar	Auxillary Type
23   1   1   2   3   4   4   5   6   6   7   6   6   6   7   6   6   7   6   6	Jako Down Down Down Down Down John Mod John Mod Mod Mod Mod Mod Mod Mod Mod Mod Mod	D.B-L dp.Lon dp.Lon dp. Lon	Own T Own T B-L 51 B-L 50 B-L B-L 55 Ful R U16 B-L 55 Ful R U16 B-L 314 B-L 314 B-L 314 B-L 314 B-L 51 Own Mun Mun Mun Mun Mun B-L 55-7 B-L 55-7 B-L 55-7 B-L 55-8-L Own B-L 51 B-L 51 B-L 51 B-L 55 Ful MGU B-L 51 B-L 55 Ful MGU Cov S HO B-L 60 B-L 60 Ful VU Cov S HO B-L 60 B-	UUUUAAAAUUUAAAAUUAAUUUTAAUUTTAAAAAAAUUUUTAAUUTTAAAAAA	45444245774448874574444487777755774441777775577444177777557744417777775577444177777755774441777777557744417777775577444177777755774441777777557744417777775577444177777755774441777777755774441777777557744417777775577444177777755774441777777557744417777777557744417777775577444177777777	No No Opt A 3 Opt No No No No No No No No No No No No No	Spi Spi 3 4 4 Spi 4 4 Spi 4 Spi 4 Spi 4 Spi 4 Spi 4 Spi 4 Spi 3 Spi 4 Spi 3 Spi 4 Sp	Tim 65720H Own C Own C Own C Own C Own C Own C Own TE Own TE Own TE Tim 65720 Wis Tim 65720 Wis Tim 65720 Wis Tim 65706 HP Wis Tim 65706 HP Tim 65706 HP Tim 65706 HP Tim 55200 Tim 65200 Tim 55200H Own U Tim 65706 HP Tim 55200H Own 1200 Eat 1618 Eat 1717 Eat 745DR Eat 745DR Eat 745DR Usis 12374 Wis Own 1200 Eat 16320 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65706 Tim 65700 Tim 6570	WF BF WF SF 22½ 2F F WF SF 22½ 2F F WF SF 22½ 2F F WF SF 2F 2F 2F F WF 2F 2F 2F DF SE 2F DF S	REHERENARE REHERRAE HERRARAHRARHRARHRARH RARH HERRAFI FERRELIHER	8.8.467 8.8.467 8.8.467 8.8.57 8.9.24 8.8.57 8.9.24 8.924 8	62.53.63 	Own 33000H Tim 33000H Tim 33000H Stat 433F Last 433F Last 433F Last 433F Tim 35000H State 5000H State	LAHH W21M W21M L41H L41H L41H L41H L41H L41H L41H L41H	516 606 600 6600 6600 6600 6600 6600 660	21M 21M FD FD FD CCD TTX TX RI RI TX RI TX TX TX TX TX TX TX	Ros	7 ½ x3x ½ 8x3x ½ 8x3x ½ 8x3 ½ x½ 9 ½ x3½ ½ 9 ½ x3½ ½ 9 ½ x3½ x½ 7x2½ x½ 7x3½ x½ 12x3 ¼ x½ 9 x2½ x½ 12x3 ¼ x½ 9 x2½ x½ 11x3x ½ 9 x2½ x½ 7x3½ x½ 7x2½ x½ 7x2½ x½ 7x2½ x½	CTTLCCC : PPPPCCCTTLTTTTCCCCCI	144 107 107 107 107 107 107 108 142 108 108 170 156 137 156 137 156 137 156 137 156 144 144 144 144 147 147 147 147 147 147	6 64 ½ 73 ½ 73 ½ 73 ½ 73 ½ 73 ½ 73 ½ 73 ½ 7	34 \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	40x214 41x214 40x3 38x214 38x214 38x214 38x214 38x214 38x214 38x214 38x214 38x214 40x3 40x3 40x3 40x3 40x3 40x3 40x3 40x	50x3 54x3 50x3 54x3 54x3 54x3 56x3 56x3 56x3 56x3 56x3 56x3 56x3 56	N
64656666666666666666666666666666666666	Per G&C Own You You You You You You You You You You	D.B-L D.B-L	Ful MG 1 B-L 60-7 B-L 60-7 B-L 60-7 B-L 55 M B-L 55 M Ful MG 1 B-L 55 Cov Cov Cov Cov B-L 55 M B-L 55	8x 8x 8x 14 660 660 660 660 660 660 660 660 660 66	DUU AUUUUUU A AUUUUUU AUUUU AUUUU	4 4 4 1 1 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1	Spi 3 Spi 3 Spi 3 Spi 3 Spi 4 Spi 4 Spi 4 Spi 4 Spi 4 Spi 4 Spi 4 Spi 5 Spi 6 Spi 5 Spi 6 Spi 5 Spi 6 Spi 6 Spi 6 Spi 9 Spi 9	Tim 66704B Tim 65700C Tim 65720R Tim 66700 Tim 66720V Tim 66700 Tim 65720	Y W 2F W W W W W W W W W W W W W W W W W	F F F F F F F F F	H 7. H 6. T 7. H 0 R 7. R 10 R 8. R 6. R 8. R 6. R 7. H 9.	8 45 75 93 8 62 8 74 95 8 62 5 74 8 95 8 95 8	5 Tim 35000 0 Pim 15733B 15 Shu 5572 8 Tim 15302 7 Shu 638 8 Tim 16302 1 Tim 16302 1 Tim 16302 1 Tim 16302 1 Tim 16302 1 Tim 16302 1 Tim 350001 5 Tim 350001 5 Shu 5582B 16 Shu 5582B 16 Shu 5582B 17 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 16000 1 Tim 35100	ILAIH	7 555 444 442 22 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	88 TD 100 RI 30 TD 100 RI 30 TD 100 RI 30 TD 100 RI 30 TD 100 RI 100	Rose Rose Rose Rose Rose Rose Rose Rose	17.13 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	大 大大大	P 1688 P 1 169 P 1 169 P 1 169 P 1 17	192   93   93   94   94   95   93   94   94   95   93   94   94   95   93   94   95   95   95   95   95   95   95	144 33 34 34 34 34 34 34 34 34 34 34 34 3	44.22  40.22  42.22  45  45  45  45  45  45  40.33  44.3	56x3	33333

	General Tire Size							Engine											Fuel System		Electrical System		-
Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.		Valve Arrangement Camshaft Drive		Dia. Main Bearings	gth M	No. Main Bearings Oiling System	Governor Make	Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Line Number
4 Ton—Cont  1 Service	6750 4440 4600 5560 3595	192	222	21000 21000 28000 21600 21600 17500	8555 8050 8550 8100 8100 10600 8000 8000 8100 6100	P 36x8 P 36x8 P 40x8 P 36x8 P 40x8 B 9.00/20 B 9.00/20 B 9.75/24 P 36x8 B 9.75/22 P 36x8	8 36x14 DP36x8 DP36x8 DP40x8 DP36x8 DP40x8 DB9.00/20 DB9.75/24 DP36x8 DP36x8 DP36x8 DP36x8 DP36x8	Wau SRL Wau MK Wau SRL Wau SRL Own 1AB Con 20R Con 21R Her YXC-4 Lyc HD	6-4 ½ x 5 ½ 6-4 ½ x 5 ½ 8-3 ½ x 4 ½ 8-3 ½ x 4 ½			83-2100 85-2500 102-2400 102-2400 85-2500 97-2000 97-2000 96-1800 88-2200 100-2600 124-2200 115-3300				10 12 13 13 78 13 78 13 78 13 13 13 13 14 13 15	4 PC 7 CC 7 CC 7 CC 7 CC 7 FP 7 FP 7 FP 7 FP 7 FP 5 PC	Wa Wa Wa Wa Own	Zen Zen Zen Zen Zen Zen Str Str Zen Zen Zen Zen	M M M P P E E E M M	D-R D-R L-N D-R D-R R-Bo A-L	A-L D-R D-R D-R D-R D-R D-R L-N D-R A-L A-L	1 2 3 4 5 6 7 8 9 10 11 12 13
14 Gotf dson RD,RW96A 15 Larrabee 85. 15 Ton 17 Acme. 10X Spec 18 Acme. 10X Spec 18 Acme. 10X 20 Am. LaF Big. Ch.16 21 Atterbury. 100 22 Atterbury. 100 23 Autocar 3½ & 5T. C 24 Autocar 3½ & 5T. C 25 Brockway. 4-5T-22 27 Clinton. 1201 28 Clinton. 1201 29 Coleman X-100 F 5-7½ 31 Commerce. 10 32 Condor CHE 33 Condor CHE 34 (Q) Corbitt. 24 34 (Q) Corbitt. 24 35 Day Elder 24 35	3300	192 194 160	Op Op	24000 23650 24000 23500 23500 22000 24000 26000 26000 22000 27050 27150 24300 29800	9400 9600 7500 10000 6700 9100 9300 9300 9400 9550 9650	B10.50/20 B10.50/20 B9.75/20 P 40x8 P 36x8 B10.50/20 P 42x9 P 38x9	DB9.75/20 DP36x8 DB10.50/20 DB10.50/20 DB9.75/20 DP40x8 DP36x8 DB10.50/20 DP42x9 DP38x9 DB9.75/20 DP40x8 DS40x7 P 42x9 P 42x9 P 42x9 F 42x9 F 40x14	Con 21R Con 15H Own Own Her WXC2 Con 21R Own Own Wau 6RB			1	100-2000 97-2400 97-2000 100-2200 105-2000 115-1600 80-2200 101-2400 101-2400 101-2400 101-2400 101-2400 101-2400 101-2400 101-2400 101-2400 101-2400 100-2400 61-1400 61-1400 61-1400 61-2200 105-2200 120-2000 120-2000 120-2000 120-2000 120-2000 120-2000 120-2000			1	11 ½ 13 ½ 13 ½ 13 ½ 13 ½ 14 ½ 14 ½ 14 ½	77 FP 77 FP 77 PC 77 PP 77 FP 44 FP 77 FFP 77 FFP 44 FP 44 FP 44 FP	Ha No Wa Ha Pe Bu Ha Ha Pe Wa KP Bu Bu Bu Bu	Zen Zen Str Str Zen Zen Zen Zen Zen Zen Zen Zen Zen Zen	M M V V V V V V V V V V V V V V V V V V	D-R D-R D-R A-L D-R A-L D-R A-L Spl Spl D-R A-L	D-R D-R D-R A-L D-R D-R A-L L-N L-N L-N A-L A-Bo A-Bo D-R A-L	14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
36 Diamond T	4100 5500 6300 7600 4735 4960 5830 2565	178 188 196 196 192 168 168 168 168	238 Op Op 231 231 0p 192 200	24000 26000 26000 28000 24000 24000 21600 25000 24800	9500 9200 9200 9200 10000 8330 8400 11800 9600 5955 7060 6965 7750	B 9.00/20 P 38x9 P 38x9 B 9.75/22 S 36x6 B 9.75/38 P 34x7 P 36x8 P 36x8 P 36x8 P 36x8 P 36x8 P 34x7 P 34x7 P 34x7 P 34x7 P 34x7 P 34x7 P 34x7 P 36x6 B 9.00/20 P 36x8	DB9.00/20 DB9.00/20 DP38x9 DP38x9 DB9.75/22 S 40x12 DB9.75/38 DS36x7 DP 36x8 DP25x8 DP25x8 DP38x9 B 12.75/20 S 40x14 DP34x7 DP36x8 DB9.00/20 DP36x8	Con 20R Con 20R Con 21R Her YXC4 Bud BBU Bud GL6 Con 20R Con 21R Con 21R WauSRL Bud BA6 Own 331 Own 331 Bulek Own 331	10—4 % 1	411 4 428 381 427.5 529.0 550.5 572.5 572.5 572.5 427.5 4427.5 4427.5 4411 331.4 331.4 331.4	40.8 45.9 40.8 45.9 51.3 40.0 48.6 40.8 45.9 45.9 45.9 45.9 45.9 45.9 45.9 45.9	94-2500	LLHHHLLLHHHHLLHHHHHHHHHHHHHHHHHHHHHHHHH	CACCNCCCCCCCCCCCCAAA	2	13 14 13 14 13 14 13 14 13 14 13 14 13 14 13 14 13 14 13 14 14 13 14 14 14 14 14 14 14 14 14 14 14 14 14	4 PCC 77 PCC 77 FPC 77 FPC 3 PCC 77 FPC 77 PCC 4 PCC 4 PCC 4 PCC 4 PCC 4 PCC 7 FPC 7 PCC 7	Pe No No Co Ha Bu Co Co Ha Ha Ha Ha Ha Ha	Zen Zen Zen Zen Zen Zen Zen Zen Zen Zen	MMVVMEEVMMVVMVMMMMMMMMMMMMMMMMMMMMMMMM	A-L A-L D-R D-R L-N L-N A-L D-R D-R D-R D-R D-R D-R D-R D-R D-R	A-L A-L D-R D-R L-N L-N A-L D-R D-R D-R D-R D-R D-R D-R D-R D-R	211 222 244 250 277 31 31 32 33 34 43 44 44 45 55 55 55 55 55 55 55 55
47 (X) Gen. Mot. T5. 48 (X) Gen. Mot. T6. 49 (X) Gen. Mot. T6. 50 (X) Gen. Mot. T7. 51 (X) Gen. Mot. T8. 51 (X) Gen. Mot. T8. 52 (X) Gen. Mot. T8. 53 Gotfredson. RW-89. 54 Gramm. GW. 5-7. 55 Gramm. HY. 5-8. 56 Gramm. Bernstefn. HY. 5-8. 56 Gramm. Bernstefn. G. 56 Hug. G. 59 Indiana. 4-5T-22. 61 International W-61 (Kenworth. 24. 62 International W-61 (Kenworth. 26. 63 Lange. 8. 65 Maccar. 8. 65 Maccar. 8. 65 Maccar. 8. 66 Mack BJ. 67 Mack AK. 69 Mack AK. 69 Mack AK. 69 Mack AK. 71 Moreland. EX- 73 Oshkosh. FH7 74 Flerce-Arrow. FF7 75 Relay. 100 AC. 76 Schacht De Luze. 4. 77 Service. 100 AC. 78 Sterling FW115, FD11. 88 Herling FW115, FD11. 88 Herling FW115, FD11.	3990 55570 34850 5450 5450 55778 5950 6150 5150 6450 4950	153 173 157 157 157 157 160 160 170 170 169 169 169 169 169 169 169 169 169 169	7 201 7 240 7 240 9 236 2 212 1 184 3 213 0 224 0 235 0 221 6 188 7 209 0 216 9 240 2 228 2 228 4 240 6 240	24000 26000 28000 22000 24000 23500 26000 22000 26000 22900 25000	10565 9500 10100 8700 8700 11000 8400 10125 8400 9200 8200 9500	P 36x8 S 36x5 S 36x5 B 10 50/22	DB9.00/20 DP36x8 DP36x8 DP36x9 DB9.00/20 DB9.00/20 DP36x3 DP36x8 DP36x8 DP36x8 DP36x8 DP36x8 DB9.75/20 DP40x8 DB9.75/20 DP40x8 DB10.50/20 DP36x3 DB36x5 DB36x5 DB36x5 DB30x5 DB9.00/20	Bud BA6 Her YXC3 Own BK Own AC Own AC	6-4% x4% 6-4% x4% 6-4% x4% 6-4% x4% 6-4% x4% 6-4% x4%	331.4 468 478.8 428.0 611.4 427.5 411.4 427.5 478.6 638.0 479.8 525.2 471.2 471.2 471.2 525.3	33.7 43.4 45.9 54.1 45.9 45.9 36.1 51.2 54.1 48.6 40 40.8	94-2500 94-2500 115-2200 105- 1100-2200 127-2300 100-24 .0 83-210 100-2400 69-1800 103-2200 75-2200 126-2200 77-1800 177-1800	HHLHLHHLLLLLLLLLLLL	AACCACNO.	2 1/2 2 3/4 3 2 3/4 2 2 4 3 3/4 3/4 3/4 3/4 3/4 3/4 3/4 3/4 3/4 3/4	13 4 13 4 13 4 13 4 13 4 15 1 15 1 10 1 10 1 10 1 10 1 10 1 10 1	7 FP 7 FP 4 PC 7 CC 7 PC 7 FP 4 PC 7 FP 4 PS 3 PS 4 PS	No Pe Pe Pe On On On	Str Str Zen Zen Zen Zen Zen Zen Zen Zen Str Str Str Str Str Str	M M M V V M M V V N M V V V V V V V V V	R-Bo R-Bo	A-L D-R D-R A-L D-R D-R N-E	56 66 66 66 66 66 66 66 66 66
80 Sterning. FC13 82 Stewart. 311 83 Walter. FH 84 Ward La France. 50 85 White5 7 White5 88 White643-5 TO	4990 7600 5 1760 5 1760 5 1760 5 1760 5 1760 5 1760	19: 0 16: 0 Or Or Or 0 17: 5 17: 0 18:	2 222 2 222 5 235 0 136 0 Op 0 Op 4 215 4 215 0 214	26000 24000 24000 28000 32000	9500 8500 10700 8000 8555 10050 8555 9340 9000 9800 9400 9400 9400 9400 9700 8737	B 40x8 B10.50/20 B10.50/24 B 9.00/24 B 9.75/20 S 36x6 P 40x8 P 40x8 P 40x8 P 40x8 P 40x8 S 36x6 S 36x6 S 36x6 S 36x6 B 10.50/24 B 10.50/24 B 10.50/24	B 40x8 B10.50/20 DB10.50/20 DB10.50/22 DB9.00/24 DB9.75/26 8 40x14 DP40x8 DP40x8 DP40x8 DP40x8 DP40x8 DP40x8 DB9.75/26 DB9.75/26 DS40x7 S 40x12 DS40x6 B DB10.50/26 DP38x9 DB10.50/26 DB10.50/26	Wau 6SRL Her YXC4 Own Con 21R Her WXC2 Bud BA6 Wau SRL Wau SRL Wau SRL Wau SRL Wau MK Wau SRL Wau GSRL Wau GSRL Own 6 Own 6 Own GRB Own GRB Own GRB Con 20R HOTH	9-000 6-4 \( \) \(	360.8 462.529.6 479.428.4 360.8 411.462.381.462.549.462.549.326.326.326.3326.3326.3326.3326.3326.3	40.8 45.9 51.3 45.8 40.8 40.8 45.8 45.8 45.8 45.8 45.8 45.8 45.8 45	100-240 69-1800 103-220 1126-185 99-220 775-220 1126-220 777-180 778-180 778-180 778-180 778-180 78-180 114-220 105-240 106-240 107-240 107-240 108-240 109	LLLLLLLLLLLLHHLL		2333222332233323333222332233322333223332233322333223332233322333223332223332223332223332223322233222332223322233222332223322233222332222	137 14 12 137 137 137 137 1137 1137 1137 1137	7 FF 7 FF 7 FF 7 FF 7 FC 4 PC 7 CC 7 CC 7 CC 7 CC 7 FF 4 FF 4 FF 4 FF 4 FF 4 FF 3 FF 3 FF	Wa Ha Ha No Mo Bu Wa Wa Wa On On	Zen Zen Str Zen Zen Zen Zen Zen Str Zen Str Zen Zen Zen Zen Zen	M M M V P V M M M V V P P V V P P V V P V V P P V V V P P V V P V V P V V P V V P V V V P V V V P V V V P V V V P V V V V V V P V	A-L RBo D-R A-L A-L D-R D-R D-R D-R R-B EIS	A-L L-N D-R A-L A-L A-L D-R D-R	7: 7: 7: 7: 7: 8: 8: 8: 8: 8: 8: 8: 8: 8: 8: 8: 8: 8:
90 Woods. 100 91 World. DB-11 5½ Ton and 92 A.C.F. T-16 93 A.C.F. T-16 93 A.C.F. T-17 94 A.C.F. T-17 95 Am-LaF Big Ch. 16 96 Autoear. F 7½ To 97 Brookway 5½-7½-7½ 100 Clutoon. 1208M-7 To 101 Commerce. 100 Z 101 Genman F 200 7½ To 102 Commerce. 100 Z 103 (22 or of the Federal. X8 7½ To 104 Federal. X8 7½ To 107 Garford. 100 Z 108 (X) Gen. Mot. To 109 (X) Gen. Mot. To 101 (X) Gen. Mot. To 111 (X) Gen. Mot. To 112 (X) Gen. Mot. To 112 (X) Gen. Mot. To 113 (X) Gen. Mot. To 112 (X) Gen. Mot. To 113 (X) Gen. Mot. To 114 (X) Gen. Mot. To 115 (X) Gen. Mot. To 116 (X) Gen. Mot. To 117 (X) Gen. Mot. To 118 (X) Gen. Mot. To 119 (X) Gen. Mot. To 110 (X) Gen. Mot. To 111 (X) Gen. Mot. To 112 (X) Gen. Mot. To 113 (X) Gen. Mot. To 114 (X) Gen. Mot. To 115 (X) Gen. Mot. To 116 (X) Gen. Mot. To 117 (X) Gen. Mot. To 118 (X) Gen. Mot. To 118 (X) Gen. Mot. To 118 (X) Gen. Mot. To 118 (X) Gen. Mot. To 118 (X) Gen. Mot. To 15 (X) Gen.	B	118	$ \begin{array}{c c} 6 & 222 \\ 6 & 240 \\ 6 & 240 \\ \end{array} $	23600 24300 28300	9850 10400 11250 10000 10000 11000 10000 10000	P 36x8  B9.75/22  B10.50/2:  B10.	DP36x8 B9.75/22 2 B10.50/22 DP40x8 D840x8 D840x8 D940x8 S 40x14 DP44x10 S 40x14 DP44x10 S 40x14 DP44x10 S 40x14 DP40x0 B99.00/20 DB99.00/20	Ha S-160 Ha 175 Ha S-175 Own Own Own Con End BTU Sterling Bud BA6 Con 21R Con B7 Coa 21R Wau RB Bud BA6 Own 331 Own 331	8-3 ½ x 4 ½ 6-4 ½ x 5 ½ 6-5 x 6 6-5 x 6 6-4 ½ x 6 6-4 ½ x 4 ½ 6-4 ½ x 4 ½ 6-4 ½ x 4 ½ 6-5 ½ x 5 ½ 6-5 ½ x 5 ½ 6-5 ½ x 5 ½ 6-5 ½ x 5 ½ 6-5 ½ x 5 ½ 6-5 ½ x 5 ½ 6-5 ½ x 5 ½ 6-3 ½ x 5 ½ 6-3 ½ x 5 ½ 6-3 ½ x 5 6 3 ½ x 5 6	468 707 707 425. 453 453 427. 611. 510. 779. 411 427. 471. 427. 471. 427.	43.3 60 60 2 48.4 48.5 4 54.5 4 54.5 5 40.5 5 40.5 5 40.5 60.4 43.3	3 120-220 175-220 175-220 3 50-120 6 101-240 6 101-240 9 100-240 10 61-14 1177-220 8 83-210 9 112-240 117-200	HH H L L L L L L L L L L L L L L L L L		278 278 278 278 278 278 278 278 278 278	10 144/1344 1131/134	4 CCC 7 CCC 7 FCC 7 FF 7 FF 7 FF 7 FF 7	No No No No No No No No No No No No No N	Zen Zen Zen Zen Str Str Str Zen Zen Zen Zen Zen	V M M V V V M E V P V V V M M M M M M M M M M M M M M M	D-R I D-R I D-R D-R D-R I A-L	D-R D-R D-R D-R L-N L-N L-N D-R N-E A-L D-R N-E	99 99 99 99 100 100 100 101 101 101 101

Line Number

Clute			Qear	S	ct		No.	Re	ar A	xle			Front Axle	Bra	kes			Frame		Body	Mou	nting	Spi	lngs	T
Line Number	Radiator Make	Type and Make	Make and Model	Location	No. of Forward Speeds		Universals Make and !	Make and Model	Final Drive and Type	Drive and Torque	Reduc. in High	Reduc. in Low	Make and Model	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type
2 3 4 5 6 7 8 9 10 11 12	Lon Mod Mod Mod Mod Own Own Own Per Per Chi	D.Own D.Own D.Own D.Own D.Own D.Own D.Own D.B-L D.B-L D.B-L D.B-L	B-L60 Max Own Own Own Own Own B-L B-L 55 B-L 55 B-L 714 Ful MGU	AUUUUUUAAUUUUUU	4444444	3 Op 3 Op 3 Op 3 Op 3 Op Opt No No Opt No	Spi	Tim66700DP Tim Tim Tim Own Own Tim 65720H Tim 65706D Own 13C Tim 65706H Tim 65706H Tim 66720 Tim 58200H	WF W/2 W 2 W/2 CD CD WF FD WF SF	RRRRR	7¾ 8.20 8.2 9.3 Opt Opt 10.1 7.25 6.8	51.6 54.6 62.2 Opt Opt 66.3	2 Tim 16302 5 Tim 5 Tim 5 Tim 5 Tim 7 Tim 15733H 15733H 15733H 15733H 15733H 15733H 15735	L4IHV L4IHV L4IHV O2IMV O2IMV L4IHV T2IMV O4IA L4IHV T2IMV L4IHV	576 500  768 768 500	CX CX FX JX TX CI CD CD	Ros Ross Ross Ross Ross Ros Ros Ros Ros	12x3 ¼ x ½ 12x3 ¼ x ½ 7x3 ½ x ½ 7x3 ½ x ½ 7x2 ½ x ½ 7x2 ½ x ½ 7x2 ½ x ½ 7x2 ½ x ½ 7x3 ½ x ½ 8x3x ¼	CCPPP	144 172 172 172 172 172 172 172 Opt Opt Var Var Opt. Opt	94 1/4 108 108 108 108 108 0 Opt 0 Opt 91 3/4 76 76 Opt. Opt	34 34 34 34 33 33 33 34 4	48x3 48x3 48x3 48x3 48x3 40x2 ½ 40x2 ½ 42x3 41x2 ½ 41½ x2 ½ 41½ x2 ½	54x3 54x3 54x3 54x3 54x3 54x3 54x3 52x5 54x3 54x3 54x3 54x3 54x3 55x3 56x3	1233456788910111121213
15	McC Per Own	D.B-L D.B-L P.B-L	B-L 60-7 B-L 55 B-L	AAA	774	No No Opt	Spi Spi Spi	Tim 66720dh Tim66702DH Tim	W/2 W-1 WF	FH	9.5 9.0 Opt	85.8	Tim 26450H Tim 16702H Shu 615	L4IH L4IH T2IMV		TD	Ros Ros Ros	8x3½x4 8x3½x¼ 7x3½x4	CCC	Opt Opt.	Opt Opt.	321/8 34 33	40x2½ 40x2¼ 40x2¼ 40x2¼	54x4 56x3 1/4 56x3 1/4	14 15 15 16
11901122345967727777777777777777777777777777777777	2 Per 3 Per 5 Per 5 Per 5 Per 5 Per 6 Per 6 Per 9 Mod 1 Lon 2 Lon 2 Lon 8 Lon 8 Lon 9 Lon 2 Lon 2 Lon 2 Lon 2 Lon 2 Lon 2 Lon 2 Lon 3 Lon 5 Lon 5 Lon 6 Lon 2 Lon 6 Lon 6 Lon 6 Lon 6 Lon 7 Lon 7 Lon 9 Lon 9 Lon 9 Lon 1 Lon 9 Lon 1 Lon 9 Lon 1 Lon 9 Lon 1 Lon 9 Lon 1 Lon 9 Lon 1 Lon 1 Lon 9 Lon 1 Lon 1 Lon 1 Lon 6 Lon 6 Lon 1 Lon 6 Lon 6 Lon 7 Lon 9 Lon 1 Lon 9 Lon 1 Lon 9 Lon 1 Lon 1 Lon 9 Lon 1 Lon 1 Lon 9 Lon 1 Lon 1 Lon 9 Lon 1 Lon 2 Lon 5 Per 5 Per 6 You 1 Con 5 Per 5 Per 6 You 1 Con 5 Per 5 Per 6 You 1 Con 5 Per 5 Per	D.B-L D.Ful D.B-L	Own Own Own Own Ful Own B-L B-L OwnGRBA Own 4B Own 7B B-L 55 B-L 70	A A A A A A A A A A A A A A A A A A A	17 1477447887447745447777758784444111 17 17 17 17 17 17 17 17 17 17 17 17	U2 No Opt No No No No No No No No No No No No No	Blo Spi Blo PSpi PSpi PSpi Spi Spi Spi Spi Spi Spi Spi Spi Spi	Tim66720DE Tim 66720W Tim 66704BY Tim 66704BY Tim 66704BY OWN 16R Tim 65706H Tim66720DE OWN C OWN TC OWN TF Tim 66704W Wis 122 Wis 122 Tim 66704DI Wis 122 Wis 122 Tim 66704DI Tim 66704DI Tim 66704DI Tim 66704DI Tim 66704DI Tim 66704DI Tim 66704W Tim 66704DI Tim 66704T Tim 66704T Tim 65706	WF 2FF 2FF 2FF 2FF 2FF 2FF 2FF 2FF 2FF 2	RRRHRHHRRRRHH HHHHRRRRRKRRRK RRKRKRKRKRK	6 0 13 8 5 5 9 13 1 10 10 10 10 10 10 10 10 10 10 10 10 1	666	Shu 638	B4IM O4IA L4IHV L4IHV L4IHV L4IHV L4IHV L4IHV L4IHV T2IH W2/4IM T2IH W2/4IM T2IH W2/4IM T4IHV L4IHV W84I W2IM T2IA W4IA B4IMW COMMW CONTROL	921 793864 8645 5022 6022 8645 5288 8288 834 921 768 8645 520 8645 520 8645 520 8645 520 8645 520 8645 520 8645 685 685 685 685 685 685 685 685 685 68	TTX C TTD CD RI TTD TTD TTD TTD TTD TTD TTD TTD TTD TT	ROS ROS ROS ROS ROS ROS ROS ROS ROS ROS	8 1 2 2 3 1 3 8 1 2 3 1 3 1 4 5 9 1 2 3 1 3 1 4 5 9 1 2 3 1 3 1 4 5 9 1 2 3 1 3 1 4 1 5 1 2 3 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DORTHICO COTORITOOROCO PARARAROCOCORITITI POTITOCOCOCO CER COCOCO HI	180 144 144 144 125 125 125 125 125 125 125 125 125 125	Opt S4 Opt Opt S4 Opt Opt S4 Opt Opt S4 Opt Opt S4 Opt S4 Opt S4 Opt S5 Opt S6	34 33 34 46 46 33 34 46 36 36 36 36 36 36 36 36 36 36 36 36 36	40x3 40x3 40x3 40x3 40x3 40x3 40x3 40x2 40x2 46x3 44x3 42x2 41 ½ x3 42x2 42x2 42x2 42x3 42x2 42x3 42x2 42x3 42x2 42x3 42x2 42x3 42x2 42x3 42x3 42x3 42x3 42x2 42x3 42x2 42x3 42x3 42x2 42x3 42x3 42x2 42x3 4x3 4x3 4x3 4x3 4x3 4x3 4x3 4	50x4 50x3 56x4 60x4 50x3 54x3 60x4 54x3 56x4 56x3 56x4 56x3 56x3 56x3 56x3 56x3 56x3 56x3 56x3	4 60 4 61 62 63 64 64 66 67 68 68 67 70 71 72 73 74 76 77 78 80 81 82 83 84 84 85 86 87 87 87 88 88 88 88 88 88 88
	92 Lon 93 Lon 94 Lon 95 G&C 97 Own 98 Lon 99 Lon 00 Own 01 Per 02 Lon 03 Per 04 Lon 06 Per 07 Lon 08 Lon 10 Lon 11 Lon 12 Lon 12 Lon	dp. Lo dp. Lo dp. Lo DP.B-L dp.Lor DB-L DB-L DB-L DD.B-L DOWN DB-L DB-L DB-L DB-L DB-L DB-L DB-L DB-L	Own B. Own B. B-L 70 B-L B-L B-L 60 B-L 714 B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma B-L-60 Ma Mun B-Mun B-Mun B-Mun B-Mun B-Mun B-Mun B-Mun B-Mun	IX IX	UUUUAAAAUAAUAUUUUUUUUUUUU	4 No 4 No 4 No 4 No 7 No 7 No 7 No 7 No 7 No 7 No 7 No 7	Spi 6 Spi 6 Spi 6 Spi 6 Spi 6 Own t Spi Spi 3 Spi 3 Spi 4 Blo Spi Blo Spi Blo Spi Blo Spi Blo Spi Spi Spi Spi Spi Spi Spi	Tim 76730 Tim 76730 Tim 76730 Tim 76730 Own 16R Own C Tim 68720 Tim 68720D Tim 68720D Tim 68720D Tim 68720D Tim 68720D Tim 68720D Tim 68700D Eat 1718 Eat 745R Eat 745R Tim 65704 Tim 66704	P W W	FFF FFF FFFF	R 7. 6. 8. 5 H 10 R 8. 10 R 11 H 8. 10 R 8. R 8. R 8. R 8. R 8. R 8. R 10 R 11 R 11 H 8. R 8. R 8. R 8. R 8. R 10 R 10 R 10 R 11 R 11 R 11 R 11 R 1	16 52 18 52 13 33 7 52 10 94 75 63 18 19 10 10 10 br>10 10 10 10 10 10 10 10 10 10 10 10 br>10 10 10 10 10 10 br>10 10 10 1	7 Tim 2745: 7 Tim 2745: 8 Tim 2745: 8 Tim 2745: 8 Tim 2745: 0 Own 16R 50 Own CL 0 Shu 0 Shu 6 Tim 17300 0 Wis HD 0 Tim 16302 0 Tim 27450T 1 Own 0 Wis 0 Tim 27450T 1 Own 1 Own 1 Own 1 Own 1 Own 2 Tim 27450T 1 Own 2 Tim 27450T 1 Own 3 Own 1 Own 3 Own 1 Own 2 Tim 27450T 2 Tim 27450T 3 Tim 36010	O4IA O4IA O4IA O4IA OPM LO4IM LO4IM LT1HV T4IA T2IM T2IM T2IMV T2IMV B4IMV B4IMV B4IMW B4IMW B4IMW B4IMW B4IMW	67 28 60 46 51 51 68	0 CD 0 CD 0 CD 5 CD 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Ros Ros Ros Ros Ros Ros Ros Gen Ros Jac Jac Jac Jac Jac	8x3 8x3x 1 9x3x 1 10 1/x 1 2 x 1 8x3x 1 10 2 3 x 1 10 2 3 x 1 10 x 3 x 1 8x3x 1 8x3x 1 10 x 3 x 1 10 x 1 1	***	172 172 172 172 172 172 158 F 152 F 162 F 162 F 162 F 162 F 151 C 151 C 151 C 151 C 151 C 152 F 125 F	87 110 94	33 33 36 34 34 34 36 36 38 34 34 34 34 34 34 34 34 34 34 34 34 34	142x3  142x3  142x3  142x3  142x3  142x3  142x3  142x3  142x3  142x3  14x3  1x	56x4 56x4 56x4 55 \(\frac{1}{2}\) x4 55 \(\frac{1}{2}\) x4 54\(\frac{1}{2}\) x4 55\(\frac{1}{2}\) x4 56x3\(\frac{1}{2}\) x5 56x3\(\frac{1}{2}\) x5 56x3\(\frac{1}{2}\) x5 50x3 50x3 54x3 54x3 54x3	92   94   94   94   95   97   99   101   102   103   104   105   104   105   104   105   104   105   104   105 

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Line Number	Make, Model and Capacity	Chassis Price			Front		Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max. Brake H.P. at Specified R.P.M.	Valve Arrangement Camshaft Drive			Length Main Bearings	No. Main Bearings Oiling System	Governor Make	Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Line Number		
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### KEY OF REFERENCES

### GENERAL '

Gross Vehicle Weight—Chassis weight,
plus body and cab, plus pay load.
Chassis Price is for truck with standard
wheelbase listed and with tires
listed F.O.B. factory, unless otherwise specified.

wise specined.

-Price of Mack AC 7-10 ton, \$4,950, tires, S 36x5, DS 40x5; 11-14 ton, \$5,500, tires, B 36x6, DS 40x6; 15 ton, \$6,000, tires B 36x7, DS 40x7. -Gotfredson-Rear Axle Model B800 also provided with 2412 EA-Car. (D)-

-Hug 87M has wheelbase of 120 in. C87 has wheelbase of 146, 154, 171 and 181.

(Y)—Chevrolet utility model with dual 30x5 rear tires lists at \$545.00.

(Z)—Larger engines and corresponding transmissions provided on all models of Corbit trucks when type of service requires them.

#### TIRES

–Balloon. B—Dual Balloons standard equipment.

P—High Pressure Pneumatics standard equipment. DP—Dual High Pressure Pneumatics standard equipment. S. Solida

S—Solids.

DS—Dual Solids.

-Pneumatics furnished at extra cost.

#### ENGINE

Make Bud—Buda Company.

Con—Continental Motors Corp.

HaS—American Car & Fdy. Co.

Her—Hercules Motor Corp.

Lyc—Lycoming Motor Corp.

Wau—Waukesha Motor Co.

Wis—Wisconsin Motor Mfg. Co.

#### Valve Arrangement

H—In head. L—"L" Head. S—Sleeve. T—"T" Head.

Camshaft Drive

C—Chain. G—Gear.

#### Piston Material

A—Aluminum alloy.
B—Semi-steel.
C—Cast iron.
N—Nickel iron.

-Aluminum alloy with strut.

#### Main Bearings GEARSET

-Rear main bearing.

### Oiling System

CC—Pressure to main, connecting rod and camshaft bearings.

FP—Pressure to main, connecting rod, canshaft bearings and piston pins.

PC—Pressure to mains and connecting rod bearings.

Pd—Pump, gravity and splash.

PS—Pressure with splash.

SP—Circulating with splash

#### Governor

Bf—Bethlehem Fabricators, Inc. Bu—Buda Co—Continental. Co—Continental.

Ha—Handy Governor Co.

HS—Amer. Car & Fdy. Co.

KP—Handy Governor Co.

Mo—Monarch.

No—Not supplied.

On—Own
Op—Optional.

Pe—Pierce Governor Co.

Si—Simplex (Eisemann Magneto Corp.)

St—Sterling.

Wa—Waukesha,

#### Radiator

Bus—Bush Mfg. Co.
Chi—Chicago Mfg. Co.
Fed—Fedders Mfg. Co.
G&O—G & O Mfg. Co.
Har—Harrison Rad. Corp.
Hex—Hexcel Rad. Co.
Lon—Long Mfg. Company.
McC—McCord Rad. & Mfg. Co.
Mod—Modine Mfg. Co.
Per—Perfex Corp.
R-T—Rome-Turney Rad. Co.
You—Young Rad. Company.

#### **FUEL SYSTEM**

#### Carburetor Make

Car—Carter Carburetor Co.
Joh—Johnson.
Mar—Marvel Carburetor Co.
Sch—Wheeler Schebler Co.
Ste—Detroit Lubricator.
Str—Stromberg Motor Dev. Co.
Stw—Stewart.
Til—Tillotson Mfg. Co.
Zen—Zerith-Detroit Corp.

#### **Fuel Feed**

Type

E—Electric Pump.

Q—Gravity.

M—Mechanica! Pump.

P—Pressure.

V—Vacuum.

#### **ELECTRICAL SYSTEMS**

A-Bo—Amer. Bosch Magneto Co.
R-Bo—Robert Bosch Magneto Co.
Apo—Apollo Magneto Corp.
D-R—Delco Remy Company.
Eis—Elsemann Magneto Corp.
L-N—Leece-Neville Co.
N-E—North East Elec. Co.
Spl—Splitdorf Electrical Co.
1—Generator and Starter at extra cost.
2—Starter not supplied. Generator at extra cost.
3—Starter at extra cost. 3-Starter at extra cost.

#### CLUTCH

D—Multiple disk.
dp—Double Plate.
O—Plate in oil.
P—Single plate.

Make

B&B—Borg & Beck Co.
B=L—Brown-Lipe Gear Co.
Cla—Clark Equipment Co.
Cov—Covert Gear Co.
D=G—Detroit Gear & Mach. Co.
Ful—Fuller & Sons Mfg. Co.
H-S—Merchant & Evans Co.
Jon—Jones Clutch & Gear Co.
Lon—Long Mfg. Company.
M-E—Merchant & Evans.
M.M.—Mechanics Mach. Co.
Mun—Muncle Products Div.
General Motors Corp.
Roc—Rockford Drill Machine Co
W-G—Warner Gear Co.

#### Make

GEARSEI

B-L—Brown-Lipe Gear Co.
Cla—Clark Equipment Co.
Cov—Covert Gear Co.
D-G—Detroit Gear & Mach. Co.
Ful—Fuller & Sons Mfg. Co.
M. M.—Mechanics Mach. Co.
Mun—Munche Products-Div.
Motors Corp.
W-G—Warner Gear Co.
War—Warner Corp.

#### Location

A—Amidships.

J—Unit with jackshaft.

U—Unit with engine. -Amidahina

### Auxiliary, Location

-Not furnished. Op—Optional at extra cost.

A—Amidships.

R—Rear of amidships main transmission

#### **UNIVERSAL JOINTS**

UNIVERSAL JOINIS

Blo—Blood Bros. Mach. Co.
B=C—Blood and Cleveland.
Cle—Cleveland Steel Prod. Corp.
Har—Spicer Mfg. Co.
M. M.—Mechanics Machine Cc.
PeS—Peters and Spicer.
Pes—Peters.
P-S—Peters and Spicer.
P-S—Peters and Snead.
Spi—Spicer and Cleveland.
Spi—Spicer and Cleveland.
Spi—Spicer and Pick.
SpB—Spicer and Pick.
SpF—Spicer & Thermodd.
U-M—Universal Machine Co.
U-P—Universal Products Co.

#### **REAR AXLE**

Cia—Clark Equip. Co.
Col—Columbia Axie Co.
Con—Continental Axie Co.
Eat—Eaton Axie Co.
Sal—Salisbury Axie Co.
Tim—Timken Det. Axie Co.
Wis—Wisconsin Axie Co.

B—Bevel.
C—Chain.
D—Dead.
F—Full Floating.
H—Hypoid
I—Internal Gear.
2—Double Reduction.
R—Relay—Pendulum Drive.
S—Spiral Bevel.
W—Worm.
V2—Worm or Double Reduction
Optional
2—Semi-Floating.
34—Three-Quarter Floating.

#### Drive and Torque

Make

-- Radius Rods and Torque Arm.
-- Hotchkiss.
-- Radius Rods.
-- Torque Arm.
-- Torque Tube.
-- Radius Rods Optional.

#### WHEELS DRIVEN

2—Forward pair of rear wheels.
4F—Front and forward pair of rear wheels.
4R—Four rear wheels.
6—Six wheels.

#### FRONT AXLE

Shu—Shuler Axle Co., Inc.
Cla—Clark Equipment Co.
Col—Columbia Axle Co.
Con—Continental Axle Co.
Eat—Eaton Axle Co.
Eat—Salisbury Axle Co.
She—Sheldon,
Tim—Timken Det. Axle Co.
Wis—Wisconsin Axle Co.

#### **BRAKES—Service** Make

Bendix.

Bendix front, Eaton rear.

Bendix fror , Own rear. K—Clark.

L—Lockheed.

LO—Lockheed front, Own rear.

O—Own.

OE—Own front, Eaton rear.

OW—Own front, Wisconsin rear.

Steeldraulic. OW—Own front, W S—Steeldraulic. T—Timken. W—Wisconsin. Ws—Westinghouse.

#### Make Location

Six Wheel.

Two wheel brakes effective on all four wheels through driveshaft.

Driveshaft effective on four wheels.

Jackshaft. Propeller shaft.

Propeller shaft effective on four whoels Final Drive and Type r-Four rear wheels.

I—Internal.
Y—Internal front and external rear.
X—External.

#### Method of Operation

Air.
Hydraulic and mechanical.
Hydraulic.
Mechanical.

#### BRAKES—Hand Location

C—Center of double propeller shaft.

2—Rear wheels.

4—Four wheels.

R—Worm or bevel gear shaft.

7—Transmission.

F—Driveshaft.

### Type

D—Disk.

I—Internal.

X—External.

Y—Internal froat and external rear.

#### STEERING GEAR Make

CAS—Columbus G. & P. Co.
Gem—Gemmer Mig. Co.
Han—Hanaum Mig. Co.
Jac—Seglnaw Steering Gear
Div. General Motors Corp.
Lav—Hannum Mig. Co.
Ros—Ross Gear & Tool Co.
Woh—Wohlrab Gear Co.

FRAME Type C—Channel. I—"I" Beam. P—Channel reinforced with plate. T—Side rails tapered front and rear.

### SPRINGS-Auxiliary Type 14—Semi-elliptic above or below main springs. 14—Quarter elliptic. 15—Coll spring.

(X) General Motors Trucks. Gross vehicle weight indicated for each model in table is the Straight Rating (combined weight of chassis, body, equipment and payload) for which chassis is designed and guaranteed to satisfactorily operate under average conditions. The size of the tires used does not affect this Straight Rating, but to secure conditions. The size of the thres used does not affect this straight reasing, but to secure maximum tire mileage it is suggested that the total gross weight be limited to a "recommended gross weight" for each tire equipment (type number) based on tire capacity. Chassis prices vary with wheelbase and tire combinations. The range of "recommended gross weights," type numbers and resulting payload range (assuming

nominal body allowance) for each model follow.

Note: Models T-15 to T-60 inclusive, as well as Models TX and WX, are available for Export only as coach chassis.

MODEL	RANGE OF RECOMMENDED GROSS WEIGHTS (LBS.)	TYPE NUMBERS	RANGE OF PAYLOAD (TONS)	
T-11	3800	1001	36 -	
T-15	4500 to 6500	1501 to 1708	34-134	
T-17	5500 to 6500	1701 to 1708	1-136	
T-19	6500 to 8500	2201 to 2223	134-2	
T-25	6800 to 9000	2501 to 2518	114-2	
T-26	8500 to 11000	261-1 to 2618-18	2-3	
T-30	10000 to 12500	3201 to 3215	2-3	
T-31	11000 to 14000	311-1 to 315-9	214-4	
TX-18634	14000	Export Coach		
WX-185	14500	Export Coach		
T-42	12000 to 15000	4201 to 4212	214-4	
T-44	12000 to 16000	4401 to 4412	3-41/4	
T-45	13500 to 16000	451-1 to 455-10	3-41/2	
WX-215	17000	Export Coach		
T-51	16500 to 19000	511-1 to 517-13	4-516	
T-55	16500 to 19000	551-1 to 557-13	4-516	
T-60	18500 to 22000	6201 to 6218	5-614	
T-61	19500 to 22000	611-1 to 619-8	5-614	
T-82	19000 to 24000	8201 to 8212	5-7	
T-83	20000 to 24000	831-1 to 837-8	5-7	
T-85	22000 to 26000	851-1 to 858-8	5-7	
T-90	22000 to 28000	9001 to 9007	5 to 71/2	
T-95	28000 to 34000	951-1 to 955-8	7-9	
T-96	28000 to 34000	961-1 to 965-8	7-9	

